DOCUMENT RESUME

ED 440 287 CE 080 057

TITLE	Distance Learning '99. Annual Conference on Distance Teaching and Learning (15th, Madison, Wisconsin, August 4-6, 1999). Proceedings.
PUB DATE	1999-08-00
NOTE	486p.
AVAILABLE FROM	Conference on Distance Teaching and Learning, University of Wisconsin-Madison, 1050 University Ave., B-136 Lathrop Hall, Madison, WI 53706-1386 ($25 plus 15% shipping). Tel: 608-265-4159.
PUB TYPE	Collected Works - Proceedings (021)
EDRS PRICE	MF02/PC20 Plus Postage.
DESCRIPTORS	Academic Advising; Academic Libraries; Academic Persistence; *Adult Learning; Adult Literacy; Bioethics; Business Education; Case Studies; College Faculty; Computer Networks; Computer Uses in Education; Constructivism (Learning); Counseling Techniques; Curriculum Development; *Delivery Systems; *Distance Education; Education Work Relationship; Educational Policy; Educational Research; *Educational Technology; Educationally Disadvantaged; Evaluation Methods; Foreign Countries; Futures (of Society); Graduate Study; High School Students; High Schools; Higher Education; Independent Study; Inservice Teacher Education; Interaction Process Analysis; Interdisciplinary Approach; Internet; Job Training; *Learning Processes; Literacy Education; Management Development; Military Personnel; Military Training; Nursing Education; Online Systems; Open Universities; Politics of Education; Professional Development; Program Evaluation; School Business Relationship; Small Businesses; Student Evaluation; Student Motivation; Systems Approach; Teacher Student Relationship; Telecommunications; Teleconferencing; Time Management; World Wide Web
IDENTIFIERS	Air Force; Canada; Educational Marketing; Intranets; National Guard; United Kingdom; United States

ABSTRACT

This document contains 71 papers and 11 workshop presentations on distance teaching and learning from a conference on educational research. The following are among the papers included: "Bridging Distances and Differences" (Nancy Anderson); "The Role of Site Directors in Faculty and Student Success" (Edith M. Barnett, Jeanie P. Kline); "Potential Benefits and Limitations of Investing in Telelearning" (Silvia Bartolic-Zlomislic); "Discussion Diagrams: A Method for Illustrating and Quantifying the Interactive Environment of Discussion-Based On-Line Courses" (Kathryn A. Bickel); "Using Distance Technology in Professional Development and Training" (Donald A. Bille); "The National Guard Distributed Learning Initiative: A Systems Approach" (Craig Bond, Fred Poker, Joseph Pugh); "The Use of Learning Technologies in Modern Business Organizations" (Theresa J. Bowen); "Designing a Web-Based Program in Clinical Bioethics: Strategies and Procedures" (Elizabeth Buchanan, Nancy Morris); "Interactive Satellite Training: More Than Just a Talking Head" (Melissa Buscho, Beth Knutson); "The Assessment of Distance Learning Evaluations" (Matthew V. Champagne, Robert A.

Reproductions supplied by EDRS are the best that can be made
from the original document.

Wisher, Jennifer L. Pawluk, Christina K. Curnow); "Creating Accessible Content for the World Wide Web and Distance Education" (Wendy Chisholm); "Constructivist Approach to Satellite Instruction" (Tom Cody, Andrew Kerr); "Using a Collaborative Model of Instruction for the Development of a Distance Education Course and Faculty Training" (Simone Conceicao-Runlee, Ann Hains, Patricia Caro, Rosemary Lehman, Bruce Dewey); "Developing Learner Self-Direction in a Webcentric Learning Environment" (Rita-Marie Conrad); "Evolution of Distance Delivery in a 10-University Consortium Providing a Nurse Practitioner Program" (Betty Cragg, Suzanne Doucette); "Piloting the Psychosocial Model of Faculty Development" (Patricia Cravener); "Strategies for Online Student Learning and Advising" (Shirley M. Davis, Christopher Reese); "How the Internet Will Change How We Learn" (William A. Draves); "Virtual Conversations: A Modest Means for Engaging Faculty at a Distance" (Margarete Epstein); "Transforming Faculty for Distance Learning" (Nancy Franklin, Donald E. Kaufman); "The Care and Feeding of an Online MBA Consortium" (Corbett Gaulden, Jr., Darcy W. Hardy, Jennifer Rees); "Distance Learning Instructor Training" (John H. Gebhardt); "Fine Tuning Interactive Delivery for High School Students in a Rapidly Growing College and Distance Learning System" (Ron J. Hammond); "The Virtual Teacher and the Classroom of the Future" (Richard A. Harrison); "Collaboration Tools" (Denise L. Henderson, Linda B. Ryder); and "Strategies for Addressing 'Cut-and-Paste' Plagiarism in Networked Environments" (Lisa Janicke Hinchliffe). (MN)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 440 287

15th Annual
Conference on
DISTANCE
Teaching & Learning

PERMISSION TO REPRODUCE AND
DISSEMINATE THIS MATERIAL HAS
BEEN GRANTED BY

K. Peterson

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Proceedings

CE080057

BEST COPY AVAILABLE

15th Annual Conference on Distance Teaching and Learning

August 4-6, 1999
Madison, Wisconsin

This year the Annual Conference on Distance Teaching and Learning celebrates its 15th anniversary in serving as a forum for the exchange of information on distance education and training. In the past decade and a half, thousands of attendees have gathered in Madison to discuss key issues in using technology effectively. And, hundreds of speakers have shared their knowledge and experience through papers, presentations, workshops, and roundtables.

Throughout its 15 year history, the conference's major aim has been to increase our understanding of factors that contribute to effective applications. While technology provides an essential means to span geographic distance, the keys to success reside in human factors—in what people do to plan, design, and support distance learning applications. This year's conference is no exception. The 15th Annual Conference proceedings contains nearly 90 papers that address important human factors from several perspectives, including: implementation planning, management and policy, instructional design, teaching methods, faculty development, learning environments, learner supports, and evaluation. The authors, as experienced distance educators or trainers, provide insights into how those factors contribute to successful outcomes and describe practical methods for implementing similar approaches in other settings.

Distance education has a rich history of more than a century of service in providing learning opportunities through technology. From the early correspondence courses of the 1880s to current use of video and the Internet, the distance education ideal has been to increase access to quality teaching resources by eliminating the barriers of place and time.

Today, distance education is poised on the threshold of a new millennium. The rapid growth and dramatic changes occurring in distance education raise critical questions about how we preserve the historic ideals of access and quality in what is increasingly viewed as a global education marketplace. As the papers in this proceedings remind us, achieving aims of access and quality is a human endeavor that goes beyond technology. It requires a commitment to human factors, an investment in human resources, and the human capacity to incorporate best practices into wise applications that meet learning needs.

My thanks to the many people who have contributed to this conference over the past 15 years. I wish to particularly acknowledge Dr. Terry L. Gibson and Dr. Chere Campbell Gibson who served as previous chairs of this conference and who continue to guide its aims through their dedication to the ideals of access and quality.

Christine Olgren
Conference Chair
University of Wisconsin-Madison

Cover design by Artifax
Layout by Maryanne Haselow-Dulin, Editing Services
© Copyright 1999, University of Wisconsin System

Table of Contents

Information Sessions

Nancy Anderson, SCING Distance Learning Network/CESA 5
Bridging Distances and Differences 3

Edith M. Barnett, Old Dominion University
Jeanie P. Kline, Old Dominion University
The Role of Site Directors in Faculty and Student Success 7

Silvia Bartolic-Zlomislic, The University of British Columbia
Potential Benefits and Limitations of Investing in Telelearning 11

Ellen A. Becker, Long Island University
Implementing an Interdisciplinary Module Through Computer Conferencing 23

Kathryn A. Bickel, Horizon Research, Inc
Discussion Diagrams: A Method for Illustrating and Quantifying the Interactive Environment of Discussion-based On-line Courses 29

Donald A. Bille, Kaiser Permanente of the Mid-Atlantic States Region
Using Distance Technology in Professional Development and Training 39

Lt. Col. Craig Bond, National Guard Bureau, Army Training Division
Fred Poker, Booz-Allen & Hamilton, Inc.
Joseph Pugh, Richard S. Carson & Associates, Inc
The National Guard Distributed Learning Initiative: A Systems Approach 45

Theresa J. Bowen, Bowen Consulting
The Use of Learning Technologies in Modern Business Organizations 51

Chaplain, Major Jimmy M. Browning, USAF Chaplain Service
Technical Sergeant Daniel Henderson, USAF Chaplain Service
Synchronous, Internet Based Training Using BrightLight™ by USAF Chaplain Service 57

Elizabeth Buchanan, University of Wisconsin-Milwaukee
Nancy Morris, Medical College of Wisconsin
Designing a Web-Based Program in Clinical Bioethics: Strategies and Procedures 65

Melissa Buscho, American Express Financial Advisors
Beth Knutson, American Express Financial Advisors
Interactive Satellite Training: More Than Just a Talking Head 71

Debbie Cardinal, Wisconsin InterLibrary Services
Association for College and Research Libraries (ACRL): Guidelines for Distance Learning Library Services . . . 79

Matthew V. Champagne, IOTA Solutions
Robert A. Wisher, U.S. Army Research Institute
Jennifer L. Pawluk, Rensselaer Polytechnic Institute
Christina K. Curnow, George Washington University
An Assessment of Distance Learning Evaluations . . . 85

Wendy Chisholm, University of Wisconsin-Madison
Creating Accessible Content for the World Wide Web and Distance Education . . . 91

Tom Cody, Western Illinois University
Andrew Kerr, Western Illinois University
A Constructivist Approach to Satellite Instruction . . . 97

Simone Conceição-Runlee, University of Wisconsin-Milwaukee
Ann Hains, University of Wisconsin-Milwaukee
Patricia Caro, University of Wisconsin-Stevens Point
Rosemary Lehman, University of Wisconsin-Extension
Bruce Dewey, University of Wisconsin-Extension
Using a Collaborative Model of Instructional Design for the Development of a Distance Education Course and Faculty Training . . . 101

Rita-Marie Conrad, Florida State University
Developing Learner Self-Direction in a Webcentric Learning Environment . . . 109

Betty Cragg, University of Ottawa
Suzanne Doucette, University of Ottawa
Evolution Of Distance Delivery in a 10-University Consortium Providing a Nurse Practitioner Program . . . 113

Patricia Cravener, University of Texas at Arlington School of Nursing
Piloting the Psychosocial Model of Faculty Development: A Systems Approach to Promoting Technology Use for Distance Education . . . 119

Peter N. Cronk, University of Southern Queensland
Emory McLendon, University of Southern Queensland
Academic Program Management—A Crucial Component in Maximising Flexibility in Online Tertiary Education Programs: A Case Study . . . 125

Bob Crook, LeCroy Center–Dallas County Community College District
Thomas Cyrs, Educational Development Association
Using Distance Learning to Teach at a Distance: How to Survive and Thrive in a Satellite Teleconference 135

Barbara J. D'Angelo, Arizona State University West
Barry M. Maid, University of Arkansas, Little Rock
MOOs and the Web: Combining Technologies to Provide Academic Support Services to Remote Students 141

Shirley M. Davis, PBS Adult Learning Service
Christopher Reese, PBS Adult Learning Service
Strategies for Online Student Learning and Advising 147

Kathleen Decker, A B Technologies, Inc
Nancy Cheski, A B Technologies, Inc
Web-Based Instruction: It's Not Just a Web Page 153

William A. Draves, Learning Resources Network (LERN)
How the Internet Will Change How We Learn 159

Dr Miles Ellis, University of Oxford, England
The Importance of Media Psychology in Improving the Quality of Distance Education 165

Margarete Epstein, Kent State University
Virtual Conversations: A Modest Means for Engaging Faculty at a Distance 169

John Floyd, University of Maryland University College
Cynthia Whitesel, University of Maryland University
Virtual Conversation: A Modest Means for Engaging Faculty at a Distance 175

Nancy Franklin, Indiana State University
Donald E. Kaufman, Indiana State University
Transforming Faculty for Distance Learning 181

Dr. Scott Fredrickson, University of Nebraska at Kearney
Web-Based Instruction: A Comparison of Ten Programs 185

Corbett Gaulden, Jr., University of Texas - Permian Basin
Dr. Darcy W. Hardy, The University of Texas System
Jennifer Rees, The University of Texas System
The Care and Feeding of an Online MBA Consortium: The Texas Experience 193

John H. Gebhardt, John Wood Community College
Distance Learning Instructor Training: A Simple Approach 201

Marcia Gibson, Star Mountain, Inc.
Timothy A. Brown, Star Mountain, Inc.
Effective Survey Instruments for Evaluating Distance Learning Implementation Within Government Agencies 207

Kay W. Gilcher, University of Maryland University College
Margaret A. Chambers, University System of Maryland
Web Initiative in Teaching: A Strategy for Faculty Leadership Development and Institutional Capacity Building 211

Ron J. Hammond, Utah Valley State College
Fine Tuning Interactive Delivery for High School Students in a Rapidly Growing College and Distance Learning System: A Student Readiness Approach 217

Richard A. Harrison, San Diego County Office of Education
The Virtual Teacher and the Classroom of the Future 223

Katherine L. Hayden, Pepperdine University
Videoconferencing in K-12 Education: A Delphi Study of Characteristics and Critical Strategies to Support Constructivist Learning Experiences 229

Denise L. Henderson, Army Management Staff College
Linda B. Ryder, Army Management Staff College
Collaboration Tools: A Case Study on Implementation 237

Karen M. Hicks, Community of Agile Partners in Education
Jack Kayser, Lafayette College
Paul Shrivastava, eSocrates
Strategic Collaborations with Electronic Pedagogies 243

Lisa Janicke Hinchliffe, Illinois State University
Strategies for Addressing "Cut-and-Paste" Plagiarism in Networked Environments 249

Fred Hurst, Florida Virtual Campus
Implementing the Florida Virtual Campus 255

Debbie Inselman, Department of Defense Educational Activity
Donna Collis, Vector Research, Inc
Asynchronous Course Development: The Secrets of Our Success 259

Jeanne Joslin, KPMG
Jacqueline P. Leonard, KPMG
How to Implement and Manage an Award-Winning Videoconference Distance Learning Network 265

Claire Kaukinen, Confederation College of Applied Arts & Technology
Diana Koski, Confederation College of Applied Arts & Technology
Designing WebLearning That Transforms Enterprise Development: The Virtual University for Small and Medium-Sized Enterprises (VUSME) www.vusme.org 269

James W. King, University of Nebraska
Gwen C. Nugent, Nebraska Educational Telecommunications
Earl B. Russell, University of Nebraska
Dara Lacy, University of Nebraska
Distance Education Policy in Post-Secondary Education: Nebraska as a Case Study 275

Mary Ann Kolloff, Eastern Kentucky University
Fred Kolloff, Eastern Kentucky University
Joyce Thomas, Eastern Kentucky University
Instructional Design Models and Distance Education 283

Gregory M. Lang, University of Toronto
On the Way to the Forum: An Online Business Strategy for 2006 291

Faye L. Lesht, University of Illinois at Urbana-Champaign
Fred E. Mastny, University of Illinois at Urbana-Champaign
Chrisann Schiro-Geist, College of Applied Life Studies
Education, Technology and Politics Across Two Continents: Strategies for Success 295

Nancy M. Levenburg, UCLA, California State University-Hayward, & Grand Valley State University
Trends in Online Education: Where We've Been and Where We're Headed 301

Jonathon D. Levy, Cornell University
Convergence: Strange Footprints to Virtual Universities 307

Susan Lopez, L & C Associates
Motivation and Persistence in Distance Learning: Making the Most of Your DL Programs 313

Ed Meachen, University of Wisconsin System
Hal Schlais, University of Wisconsin System
The University of Wisconsin Distributed Learning System 319

Kenneth W. Mudge, Cornell University
David G. Way, Cornell University
Web-Based Distance Learning for University Level Instruction in Horticulture With Emphasis on Psycomotor Skill Development 327

Yuko Mulugetta, Cornell University
Abraham Mulugetta, Ithaca College
Exploring Primary Factors Hindering the Development of Distance Learning in the Higher Education Market 333

Kathy Now, Wisconsin Public Service Corporation
Julie Christensen, Wisconsin Public Service Corporation
Ellen Larson, Wisconsin Public Service Corporation
How to Deliver Self-Service Learning Opportunities in an Intranet Environment 339

Robert A. Oehlkers, University of Wisconsin–Madison
What the Distance Learner Says About Support: Research Results 345

Rena M. Palloff, Crossroads Consulting Group and The Fielding Institute
Keith Pratt, Crossroads Consulting Group and Ottawa University
Making the Transition: Helping Teachers to Teach Online 349

Sally Reynolds, Katholieke Universiteit Leuven, Belgium
Gee Cammaert, Katholieke Universiteit Leuven, Belgium
Johan Van Heddegem , Katholieke Universiteit Leuven, Belgium
Success Factors in Telepresence Teaching: Results From the Blueprint for Interactive Classrooms (BIC) Project Involving European Universities 355

Michael J. Robertson, Southeaster Louisiana University
Successful Student Assessment Strategies for On-Line and Web-Based Courses 363

Lorri Rosenfeldt, BOCA International
On-Line Training Development the First Year 369

Heinz Schenk, Human Resource Management, Technikon Southern Africa
From Lecturer to Distance Education Practitioner: Keeping Careers on Track 375

Ken Seemann, MCI WorldCom
Time Management Goes the Distance 383

CMSgt Jenny Smith, Air National Guard I.G. Brown Training and Education Center
Mr. Charles Fleming, Air National Guard I.G. Brown Training and Education Center
Developing Computer-Based Training Modules to Combine With Teleseminar and Inresident Phases to Enhance a Tradionally Inresident Education Program 389

P. Sean Smith, Horizon Research, Inc.
Kim Obbink, Montana State University
Evaluating On-Line Courses: Unique Opportunities and Valuable Lessons Learned 395

Robin Soine, Wisconsin Technical College System Foundation, Inc.
Instructional Design in a Technological World: Fitting Learning Activities Into the Larger Picture 401

Susan Sykes Berry, University of Missouri-Kansas City
Peggy Mullaly-Quijas, University of Missouri-Kansas City
So You Want to Provide Library Support for a Distance Education Program? A Blueprint for Getting Started 409

Lew Terpstra, Madison Area Technical College
Developing an Administrative Plan for Delivering Distance Learning Courses and Programs: Process, Pieces and Players 413

Robert Threlkeld, California State University, Fresno
CalStateTEACH: Building an Industrial-Strength Distance Education Program 419

Donna Weisman, North Florida High School, Florida's Online High School
Pam Birtolo, South Florida High School, Florida's Online High School
Enquiring Minds Want to Know: The First Year of an Online High School 425

Donald J. Winiecki, Boise State University
Preparing Students for Asynchronous, Computer-Mediated Coursework: Design & Delivery of a "Distance Education Bootcamp" 433

Mr Thomas E Wolfe, Maxwell AFB, Alabama
Crossing the International Communication Barriers 439

Workshops and Cracker Barrels

Wayne Batchelder, The Art Institute of Dallas
Catherine Tompkins, The Art Institute of Dallas
An Overview of HTML for Distance Education 447

Curtis J. Bonk, Indiana University
Vanessa Dennen, Indiana University
Teaching on the Web: With a Little Help From Your Pedagogical Friends 453

Mary Brintnall-Peterson, University of Wisconsin-Extension
Joy First, University of Wisconsin-Extension
Creative Use of the Web to Support a National Video Satellite 459

Eugenia D. Conway, New Mexico State University
Thomas E. Cyrs, Ed.D., New Mexico State University & Educational Development Associates
John P. Shonk, New Mexico State University
Instructional Technology Decisions: Designed for Learning or WWWWWWW (Whew!): Why We Went With the World Wide Web 467

Joan Hanor, California State University San Marcos
Robert J. Bulik, University of Texas Medical Branch
Sherry Wulff, Alverno College
Challenges for Self-Directed Learning Within Distance Learning 477

Carolyn Johnson, Northwest Missouri State University
Pat McFarland, Northwest Missouri State University
Joyce Meldrem, Northwest Missouri State University
Connie Ury, Northwest Missouri State University
21st Century Curriculum Resources for Distance Learning 483

Nancy Levenburg, UCLA, California State University–Hayward, & Grand Valley State University
Navigating the Murky Waters of Web Conferencing Software: A "Consumers Reports" Approach to Evaluating the Options 489

Sharon Naylor, Illinois State University
Lisa Janicke Hinchliffe, Illinois State University
But We Don't Have a Million Dollars! Providing Distance Learning Library Services With Limited Budget and Personnel 493

Kenneth S. Rudich, Arizona State University
Reliable Market Intelligence for Distance Education: A Knowledge Tree Approach 499

John M. Thompson, Spokane Falls Community College
Connie Broughton, Washington State Community and Technical Colleges
How Do You Plan, Develop, and Implement a Statewide Virtual Community College in One Year? 507

Judy Tribble, Indiana State University
H. Scott Davis, Indiana State University
Across Institutional Lines: Librarians Partnering for Distance Education 515

❖ Information Sessions ❖

Bridging Distances and Differences

Nancy Anderson
Distance Learning Specialist
SCING Distance Learning Network/CESA 5

Honoring Learning Styles

Brain research and studies on multiple intelligences have prompted the creation of frameworks for instruction that encourage active learning and creativity, help learners make personal connections, and honor different learning styles. These instructional design processes create avenues for instructors to expand their teaching methods and find ways to help students develop effective learning strategies regardless of distance. This information provides an excellent framework for training distance education instructors and also for teaching in distance learning settings. The strategies that are used to engage learners in a classroom are also very effective for increasing interaction that occurs over a distance.

Dr. Bernice McCarthy created an instructional design model that can be used to address the diverse needs of learners at all levels. The 4MAT system moves teachers and learners beyond traditional instruction and encourages active participation and learning. This framework helps instructors understand how others perceive and process the information they receive. Learners need to have an opportunity to experience learning in the area where they are most comfortable and they also need to learn how to adapt to other learning situations. This framework builds respect for other learning styles, honors their differences, and encourages the development of whole brain learning.

This short discussion of the 4MAT framework and learning strategies based on the brain research will only touch the surface of the issues involved with understanding and addressing the diverse needs of learners of all ages. Four different categories of learners will be discussed in this presentation. Imaginative learners need to connect with the learning experience and need to participate in meaningful activities. If they do not understand why they are doing something they will have trouble processing the information that is presented. They enjoy working in cooperative groups and need time to reflect on what they are learning. Analytic learners need to have information presented in sequential order with all the facts and details. They are logical and adapt well to traditional instruction methods. Common sense learners need to have opportunities to experiment with the information they receive. They want to get to work right away and prefer concrete plans and timelines. These learners are looking for practical applications of what they are learning. They want results. Dynamic learners are risk takers and thrive on challenges. They are creative and enjoy self-discovery. These learners need opportunities to work on new ideas and take the information one step farther.

Making Connections

Understanding the differences in your learners (staff development participants or classroom students) will determine which instructional strategies will be most effective. This section will focus on the attributes and needs of each type of learner and how their learning needs can be addressed.

Imaginative learners need to feel empowered and involved. They are active listeners and work best when there is a shared mission or goal. These learners want to feel some sense of community with anyone they are working with. Cooperative group activities will help them feel comfortable. This type of activity also encourages participation over a distance. Group activities should not pit one group against another but encourage connections between participants at each site and also between the remote sites. Personal reflection activities are also productive for this type of learner. They will be very successful with journals, brainstorming, mindmaps, and autobiographic experiences. They enjoy group activities such as discussions, simulations, and study teams.

Analytic learners prefer traditional learning situations and like to have things presented in a sequential mode. They need facts and details that make sense and seem logical. Imaginative learners might prefer mind mapping to understand the connections while the analytic learners will prefer Venn and tree diagrams, outlines, and accurate data. These learners tend to want to know all the facts before they will be willing to speak. They prefer to be assessed and evaluated by objective tests, oral exams, and constructing models.

Common sense learners work best when they have specific plans and timelines. They need to see practical applications of their work. Experimentation and simulation activities are a good way to involve these learners. They need to have concrete results and opportunities to be involved in hands-on activities. Puzzles, diagrams, computer experiments, documentation, and demonstrations work well with these learners.

Dynamic learners need challenges and new ideas to stay involved. They need opportunities to be creative and have opportunities for self-exploration. Portfolios, field notes, presenting a position, exhibitions, and publications work well as assessment tools for this type of learner. These learners like to try something new with the information they have learned about.

Some tools and strategies can be useful for all learners and can help them become more comfortable learning in other ways. One tool that can be used this way is *Inspiration* software. This software helps them organize their thinking so they are able to improve their understanding and presentation of what they know. *Inspiration* uses mindmapping and visual diagrams that will help imaginative learners see connections and relationships between ideas that are being presented. This software shows how to convert a visual diagram to an outline format so the imaginative learner can organize their visual representation into a writing tool. Analytic learners can start with the outline format that they are comfortable with and move their thoughts into a visual form that can convey their message to participants who need visual representations to improve their understanding. This software can also arrange the information in a tree diagram that works well for the analytic learners. Common sense learners can use this tool to set up timelines and plans for their projects. They will also find the diagram features of this software very useful. Dynamic learners will need the organizational features of this software to organize their ideas and creative projects. This will add the necessary structure to their projects so they are easier to complete, implement, and share with others.

Instructional design strategies. Using a variety of instructional design strategies will keep a distance education instructor from becoming simply a "talking head." It will also address the needs of the diverse learning styles that are usually found in most learning situations.

The first instructional design component that will help break down the distance focuses on humanizing the learning situation. This will help build connections over a distance and will accommodate the needs of the imaginative learners who need to feel connected to others in the group. Welcome letters to new students can help prepare them for establishing connections with their instructor. Featuring sites and students will help them develop personal connections with each other and improve classroom rapport. This can also be accomplished by acknowledging special events. Whenever possible it is helpful for the instructor to try to teach one session from each of the remote sites. This is not always possible due to distance and scheduling issues but it does help establish more of a personal connection. Including music and video in your presentations and classes will also accommodate the needs of your visual and creative learners. It can also add variety by giving you an opportunity to use visual cues instead of verbal ones. The most important thing to remember about humanizing a distance learning session is that the person facilitating the session needs to be themselves.

Participation is an instructional design component that should be used immediately. This will encourage interaction between students at all sites and will meet the needs of all learners. The dynamic learners and common sense learners have a need to be actively involved as soon as possible. Imaginative learners will feel more connected if they can participate in a group activity in the early stages of the session. The analytic learners may not feel this need as strongly as the other learners but this will help them connect with others in the session. Participation through activities will also make the technology transparent. They will not be as likely to notice the technology if they are involved in interactions with other participants. Some participation techniques include assigned questions, role playing, brainstorming, debates, directed or planted questions, and games.

Delivery methods need to be varied in a distance learning classroom. The variety should be based on using techniques that will meet the needs of your diverse learners. Attention grabbers are needed to encourage immediate participation and make connections between the different sites. Organizers are helpful to keep the facilitator on schedule and also to meet the needs of the analytic and common sense learners. Verbal and visual cues are also useful for organizing the session and helping participants focus. Personal stories will add variety and make connections for the imaginative learners. Research shows that short segments accompanied by some type of change are best because the average attention span lasts about ten to fifteen minutes.

Feedback techniques need to be employed to encourage participation and also to evaluate how well the needs of the different learners have been met. This feedback should include self-evaluation for the imaginative and dynamic learners. It will also provide check points for the analytic and common sense learners. This feedback will reinforce the learning and correct any misunderstandings.

Evaluation and assessment tools should also be varied to accommodate the needs of the participants. Analysis of journals, group discussions, self-assessment are some tools that meet the needs of the imaginative learners. Analytic learners prefer traditional assessment models such as objective tests, exit slips, and essays. Puzzles, field and lab work, worksheets, diagrams, and computer experiments work well for common sense learners. Assessment tools for the dynamic learners include projects, portfolios, presentations, and taking a position on an issue.

Using these instructional design tools and developing an awareness of the diversity of your learners will help bridge the distance between classroom sites and also between participants.

References

McCarthy, B.(1987). *The 4MAT system: Teaching to learning styles with Right/left mode techniques.* Barrington, Il: Excel.

McCarthy, B., & Morris, S. (1997). *Format coursebook 1 fundamental training: A comprehensive guide to the study and presentation of the 4MAT instructional method.* Barrington, Il: Excel.

Teletraining Institute. (1998). *The academy summer 1998 student guidebook.* Stillwater, OK: Teletraining Institute.

Westhaver, M., & Kimberlin, M. (1998). *Classroom ideas using inspiration: For teachers by teachers.* Portland, OR: Inspiration Software.

Biographical Sketch

Nancy Anderson currently provides staff development and instructor training workshops for the SCING Distance Learning Network. The SCING network includes 14 school districts, 7 technical college sites, and a classroom at the CESA 5 office in Portage, Wisconsin. Nancy completed the Academy for Distance Education training provided by the Teletraining Institute in Stillwater, Oklahoma. Her previous professional experiences include working as a library media specialist in K-12 school districts, teaching at the elementary level, and consulting with instructors on ways to integrate technology into the curriculum. Her music background has also provided her with opportunities to provide private music instruction and perform with various musical groups.

Address: CESA 5
P.O Box 564, 626 E. Slifer Street
Portage, WI 53901-0564
Email: andersonn@cesa5.k12.wi.us
Phone: (608) 742-8814 Ext. 227
Fax: (608) 742-2384

The Role of Site Directors in Faculty and Student Success

Edith M. Barnett, Ed.D.
Assistant Vice President, Distance Learning and Extended Education
Old Dominion University

Jeanie P. Kline, Ed.D.
Director, Distance Learning Operations
Old Dominion University

Overview of Distance Learning at Old Dominion University

Electronic and distance education have been characteristics of Old Dominion University's mission and operations since 1984. The foundation and major infrastructure components of the University's distance learning program, TELETECHNET, were in place and operational for several years prior to the formal beginning of the program in 1994. The technology within this infrastructure is a digital satellite system with one-way video, two-way audio network connection. Internet courses are currently being developed; however, the satellite system represents the backbone of this program.

The University established partnerships with community colleges, military installations and industries, providing downlinking equipment at each receive location where classes would be offered. The "two-plus-two" articulation agreements with community colleges allowed students to complete their first two years of a bachelor's degree at the community college, with the remaining two years offered at the same location from the University. Currently, over forty receive sites are receiving courses from Old Dominion, including numerous sites in Virginia, and other sites in Washington, Indiana, the District of Columbia, North Carolina, and Bahamas. A new site in Arizona is also being established.

Old Dominion outlined several major objectives in its efforts toward providing education at a distance to a growing constituency of learners:

- The initiative would provide increased access for geographically, occupationally, and socially place-bound students to baccalaureate programs through a two-plus-two partnership with the Virginia Community College System (VCCS). Place-bound students are considered those unable to attend a residential four-year college due to employment, family obligations and/or financial considerations.
- The initiative would be cost effective.
- The degree programs offered would stimulate economic development efforts.

Since the majority of the programs offered are selected to boost economic development in the local community as well as to provide access to programs to significantly place-bound adult learners, the process for this selection was as follows:

- A statewide needs assessment was conducted during 1992-93.

- Data was gathered at meetings held on each community college campus with senior administrators familiar with community workforce issues.
- Prior experience and success with the engineering technology and nursing degree programs ensured that these programs were included in the offerings.

The programs ultimately chosen for TELETECHNET included business administration, engineering technology, criminal justice, human services counseling, nursing, health sciences administration, and professional communication. Later, graduate programs in business administration, taxation and special education were added based upon strong interest from various communities throughout the state.

Academic programs offered at a distance are identical to those offered on campus. In addition, faculty who teach each of the courses are those who teach the same courses on campus. Library support, which has been planned and implemented by the Distance Education Committee of the University Library, involves all basic library needs: patron registration, borrowing privileges, access to the library's print and electronic collections, instruction on using library services and resources, point of use assistance, interlibrary loan services, and document delivery systems.

Computers purchased for all full-service TELETECHNET sites allow students to complete their coursework using software purchased by the University. Faculty requests for such software are made several months prior to the start of class, allowing for the purchase and installation of the software in a timeframe sufficient to meet course requirements.

Course materials are available through MBS Direct, an affiliate of Barnes and Noble. Books and coursepaks are easily accessible through a toll-free telephone number or online requests. The University shifted to MBS Direct during the 1997-98 academic year when the number of sites and students grew beyond a manageable level of course material support from the Office of Distance Learning and community college bookstores. Course syllabi are accessible via the web. Students are provided the web address for each semester, and they are able to download the syllabus for each of their classes several weeks prior to the start of the class.

TELETECHNET Operational Structure

The success of Old Dominion University's distance learning program is evident from the generation of over 16,000 registrations per year and a retention rate of approximately 86%. Much of this success is due to the structure designed for this initiative. Site directors have been hired for nearly all full-service sites in Virginia, the District of Columbia, Arizona, and Washington. Regional directors oversee between four and six site directors, with one regional director having responsibility for the TELETECHNET USA initiative, i.e., those sites outside the state of Virginia. Student support services are provided primarily by site/regional directors and their staffs, operating a "mini campus" for the University at each of the distant sites. The staff at each site is available to assist with all support related to admissions, registration, financial aid, advising, military student services, disability services, career information, and other areas in which the students may have specific needs.

Sites are open 7 days per week for approximately 82 hours, thus staffing is required for this timeframe during the week. This staffing provides opportunities for students to register for and take classes, schedule advising appointments, complete required University tests/ assessments, and access web-based and print materials sent from the main campus.

The Site Director Role

Site Directors and Students

The keen interest site directors take in students at their locations results in students having positive experiences with the University, and is reflected in responses on student surveys conducted each year by the Director of Assessment. Students at these locations generally believe they receive good or excellent support from the staff, and are enthusiastic in their comments about the University.

Site Directors and Faculty

This support from the site directors is extended into the academic arena, with site directors interacting by phone, fax and e-mail with faculty who teach in the TELETECHNET program. Faculty often create distribution lists of site staff so that they can provide communication and updates to sites about class requirements, expectations and other information. In turn, site directors communicate regularly with faculty about individual students and/or the entire class at the site. Site directors provide feedback from the students beyond the actual classroom setting, so that faculty will have "informal" perspectives about the distance learners at various locations around the country.

More formal information is furnished during faculty training on the main campus. Site directors from several locations "meet" faculty over the airwaves to provide an understanding of overall site operations as well as unique procedures at individual sites. Information about material distribution, test procedures and proctoring, advising, and other course-related items are discussed. Faculty are provided opportunities to interact and ask questions of the site directors during this important faculty training time.

In addition, one of the site directors whose background is adult education comes to campus and delivers a presentation about the adult learner. This is an interactive meeting with faculty that is very well received. Since many faculty have experience primarily with traditional-aged learners, this information provides a different perspective on the teaching-learning environment. Further, faculty come away with a positive view of site directors, since this person is an administrator who holds a doctorate and has taught in higher education prior to working in this position.

Conclusion

The role of site director in Old Dominion University's TELETECHNET program is a significant one that positively impacts student success and retention, and enhances the teaching/learning environment at locations separated from the main campus. The relationship developed between site director and student, as well as that between site director and faculty at the University has served students' very well. As the program continues to evolve, particularly with asynchronous learning experiences being developed, the site director will continue to play a vital role in student/faculty success.

Biographical Sketches

Edith Barnett, Ed.D., completed her doctoral studies at Teacher's College, Columbia University, in 1995. She has been employed at Old Dominion University for 15 years and has been involved in establishing off-campus programs, weekend college, military education programs, and an extensive distance learning program. She also has experience teaching adults in both traditional and nontraditional formats.

Address: Old Dominion University
430 Gornto TELETECHNET Center
Norfolk, VA 23529
E-mail: ebarnett@odu.edu
URL: http://www.odu.edu
Phone: (757) 683-3163
Fax: (757) 683-5492

Jeanie Kline, Ed.D., has served in education for nearly twenty years, both as an educator and an administrator. She earned her doctorate in higher education administration from the College of William and Mary in 1996. She has worked in distance learning at Old Dominion University since 1993. Current areas of oversight within the distance learning program at Old Dominion include the budget, curriculum planning, materials distribution, faculty assistance in administrative areas, and distance learning personnel.

Address: Old Dominion University
433 Gornto TELETECHNET Center
Norfolk, VA 23529
E-mail: jkline@odu.edu
URL: http://www.odu.edu
Phone: (757) 683-3163
Fax: (757)-683-5492

Potential Benefits and Limitations of Investing in Telelearning*

Silvia Bartolic-Zlomislic
Research Associate, Distance Education & Technology
The University of British Columbia

*Paper adapted from Bartolic-Zlomislic & Bates (1999), submitted to the *Canadian Journal of Communications*.

This session seeks to describe the potential benefits and limitations of investing in telelearning through the use of preliminary findings from a cost-benefit research project conducted at the University of British Columbia and federally funded by the Canadian Telelearning Networks of Centers of Excellence. Potential benefits and limitations to investing in online learning include: new markets, economic benefits, international partnerships, reduced time to market, educational benefits, the need for start-up funding, adequate time, organizational readiness, and student readiness.

Project Background

The University of British Columbia's Department of Distance Education & Technology conducted a two-year study entitled "Developing and Applying a Cost-Benefit Model for Assessing Telelearning" which was federally funded by the Canadian Telelearning Networks of Centers of Excellence. The methodology used was based on Bates (1995) ACTIONS model for assessing learning technologies. Issues around the following topic areas were explored: **A**ccess, **C**osts, **T**eaching and Learning, **I**nteraction and User-friendliness, **O**rganization, **N**ovelty, and **S**peed.

Data was collected primarily through student questionnaires and student and faculty/staff interviews. Cost factors investigated include: 1) capital and recurrent costs, 2) production and delivery costs, and 3) fixed and variable costs. For further explanation see, Rumble (1997).

Benefit and limitation factors assessed include: 1) performance driven benefits, 2) value driven benefits, and 3) societal or "value added" benefits. For further explanation, see Cukier (1997).

The discussion below will be based on the results of three of six Canadian case studies involved in the project. These include:

- An online Master's level course in Educational Studies "Developing, Designing and Delivering Technology-Based Distributed Learning (EDST 565f)" developed at the University of British Columbia in partnership with the Monterrey Institute of Technology (ITESM) in Mexico. This was the first of five courses to be developed toward a postgraduate certificate in technology-based distributed learning (Bartolic-Zlomislic & Bates, 1999);
- An online Master's level course in Education "Research Methods in Education (Research Methods)" developed at the Ontario Institute for Studies in

Education/University of Toronto. The Research Methods course was part of OISE/UT's Distance Education Master's program, the first degree program offered fully online at OISE/UT (Bartolic-Zlomislic & Brett, 1999);

- An online undergraduate course in Creative Writing (CRWR 1100) developed at Kwantlen University College. The CRWR 1100 course was an introductory course in Creative Writing. A template was developed from this course to create additional online creative writing courses at Kwantlen (Butschler & Bartolic-Zlomislic, 1999).

The remaining three case studies, based on cases at Télé-université, Québec, Simon Fraser University, and Kitimat Community Skills Centre (both in British Columbia) will be completed by the end of July, 1999. Full case reports will be posted online at http://det.cstudies.ubc.ca/detsite/researchproj.htm.

Why Invest in Online Learning?

The three studies so far analyzed reveal several potential benefits to online learning. Main benefits include new markets, economic benefits, international partnerships, reduced time to market, and educational benefits.

New Markets

There is the potential with online learning to tap into markets, both national and international, that cannot be easily accessed with other more traditional forms of course or program delivery. The UBC case study, EDST 565f, for example, tapped into three different target groups:

- Students in Latin America, registered with ITESM, Mexico, for a Masters in Educational Technology;
- UBC graduate students registered in an otherwise conventional, on-campus Masters of Education program;
- Certificate and audit students from around the world registered with UBC as "non-credit" students.

UBC, thereby, was able to reach a much larger market than most of its print-based distance courses and a much wider market than is possible for a face-to-face course. Students registered with UBC were from 17 different countries, including China, Japan, Norway, Yugoslavia, USA, and Australia. (See Bates & Escamilla, 1998, for more details of this program).

Similarly, OISE/UT had students participating in the course who lived in Europe and the Dominican Republic, as well as several students who lived outside of the city of Toronto where OISE/UT is situated. All were intending to complete a full master's program at a distance.

Kwantlen University College was able to sustain a program that had been struggling for viable numbers in an on-campus version. When offered at a distance class size increased to twenty students per offering, and students surveyed all said that the on-line delivery gave them more flexibility, and many said that they would not have been able to have taken the course in an on-campus version.

In addition to the potential of admitting students from around the globe, another new market potential is in the development of fully online graduate degrees. There are several graduate degrees offered entirely at a distance primarily through print-based methods, such as the British Open University's MBA and its Masters in Distance Education. Several have on-line components, such as Athabasca's MBA, but still depend heavily on print.

As far as we know, though, there are relatively few graduate degrees offered entirely or even primarily online. This is not surprising, given that it takes several years to develop a whole masters program, and the Web is still only five or six years old, with respect to educational applications. The study findings however suggest an increasing need for such degrees. With the growth of a "knowledge society" comes the need for lifelong learning. At the same time, economic pressures make it difficult for individuals to take several years off from work to attend university on a full time basis. Online graduate degrees offer the opportunity for students to continue their education while at the same time continue working in their field of business.

Economic benefits. One benefit of the UBC postgraduate certificate in technology-based distributed learning program is that over the life of the first course and the entire program of five courses, it is expected that all course development and delivery costs will be fully recovered from fees. *(Due to space limitations, a breakdown of the development and delivery costs of the first course offering of EDST 565f will be provided in a handout at the session.)*

A small profit will start to be made by UBC at the end of the third year. A more substantial profit will be made over the life of the entire program of five courses as start-up costs (which are substantially higher than ongoing/maintenance costs) will have been absorbed in the first course, EDST 565f. This course served as a template for the other four courses, therefore less time (and money) was required to develop the remaining four courses. The profit serves as a contingency in case unexpected costs arise or projected student numbers are not reached.

The UBC-ITESM partnership provided a means for keeping costs down in a market where there is a ceiling on what people are willing to pay. ITESM paid UBC $15,000 for the rights to offer this course in Latin America. UBC retained the rights for the rest of the world. This helped reduce the risk to both partners.

The economic benefits in the other two studies were less clear. Neither the OISE nor the Kwantlen program was run on a cost-recovery basis. Students in the OISE program were charged the regular graduate fee (C$740) in Ontario, and the institution would receive the normal weighted FTE per student, although as in many other Canadian institutions this is not necessarily allocated to a course or department on a strict pro-rata basis.

Kwantlen's costs were even more complex, since the course was the first on-line as well as the first distance education course that the college had offered. The on-line development of the first offering of the course was out-sourced to another institution, while the second offering was developed in-house. However, as with the other two studies, the second offering incurred substantial start-up costs, which need to be averaged over several courses.

International partnerships. With the potential for global markets comes the opportunity for international partnerships.

Pedagogical benefits due to international partnerships include access to international experts and students. Three international experts in the field of distance and distributed learning were guest tutors for the EDST 565f course. Each tutor moderated and participated in a week-long discussion forum. In this way, students not only learned from the three UBC instructors but also benefitted from the expertise of three additional international experts.

Students also benefitted from the highly diverse nature of fellow students due to collaborative components in the course (international discussion groups and collaborative assignments).

Furthermore, the partnership with ITESM also helped overcome otherwise difficult language and cultural issues. While the UBC team provided a tutor guide and help, ITESM provided its own online tutors for these courses. ITESM students could choose to be in either a Spanish or an English language discussion forum.

Reduced Time to Market

Another benefit of the online delivery method is that courses can be developed and revised very quickly or even as the course is in progress. The EDST 565f course, for example, was developed from scratch in less than 10 weeks. Although it is not recommended to develop a course in such a short time, UBC potentially might have lost the contract with ITESM if the course had not been available in the 10 weeks from the time the contract was signed. It would have missed the start of ITESM's academic year, and ITESM might have looked for another partner or gone cold on the idea of a partnership over a longer period.

The Kwantlen case identified three factors that relate to how quickly a course can be developed and revised:

- the level of infrastructure in place to support online courses,
- choice of software, and
- the appropriateness of the course design for an online environment.

Kwantlen, for example, had no infrastructure in place to offer online courses for the first offering of CRWR 1100. They had to rely on the infrastructure of another organization (The Open Learning Agency) in order to offer the course (and were required to pay a fee). Development of their own infrastructure took several months of time and the development of a new position, a coordinator of distributed learning, in order to get all the required elements in place for future course offerings (e.g. systems administration and registration).

The type of software used for online courses can also affect how quickly a course can be developed. Kwantlen found, for example, that the time needed to learn how to use a particular software (in this case Lotus Notes) can be substantial. In addition, they had to develop training workshops that were conducted prior to the course in order to help students learn how to use and load the software on to their own computers. Switching to using a web browser such as Netscape alleviated the need for these training sessions. Similarly, OISE/UT found the use of WebCSILE compared to Parti software cut their work time by nearly half.

Finally, simply transferring face-to-face lecture notes on to a computer and posting these online does not constitute an effective online course. The instructor for the Kwantlen CRWR 1100 course found that much of the course content came from online discussions and student writing samples which could be easily shared among the class. Small amounts of lecture notes were included as course materials. Feedback changed from individual instructor feedback in face to face classes to collaborative feedback from students writing and critiquing assignments online.

Educational Benefits

A common benefit found in all three of the case studies was that students learned more than just course content. As in these courses the main medium of communication was writing, significant improvements in writing skills were identified.

Students reported that their computer and time-management skills also improved.

Another benefit of the online delivery method found in all three studies is that the associated anonymity can result in greater participation from all students, including 'shy' ones. The lack of visual cues allowed the instructor to treat all students in the same manner. For example, one of the instructors reported that in a face-to-face class she would not be as critical of students whom she perceived as being sensitive or shy. Since the online format did not provide the visual cues from which such perceptions are made, this instructor treated all students in the same way. Instead, though, of being a disadvantage, she found this led to greater participation by all students.

Perhaps the most important benefit though from a distance education perspective is that the on-line discussion facility provided a satisfactory form of student interaction for distance learners that has been lacking in print-based distance education courses.

Limitations

Several potential limitations were also found in the three studies.

The Need for Start-up Funding

The UBC cost-benefit study revealed that start-up costs were substantially higher than anticipated. In fact, the first offering of the EDST 565f course was 75% over budget! This was largely due to higher than anticipated time spent on instructional and administrative tasks. *(Due to space limitations, a table comparing researched and budgeted costs will be provided in the session handout.)*

The cost for the second and subsequent offerings of the course decreased substantially. Lower costs in subsequent courses were due largely to improvements made in the way the course was administered and conducted, and better organization of the online tutoring. This will be explained further in the "adequate time" and "organizational readiness" sections below.

Kwantlen employed several strategies in order to decrease start-up costs for the CRWR 1100 course and to make it feasible to begin work on developing an online program, although the necessary infrastructure was not yet in place. In addition to obtaining a provincial grant to be used toward developing online programming, staff sought to maximize benefits from existing resources. For example, the Department of Distributed Learning and Employee Development at Kwantlen acquired a server from another Kwantlen department (which needed a more powerful server) to be used for administrative functions. Because the server had sufficient capacity, it was also used for online course delivery. In addition, Kwantlen hired a Co-op student to help with the conceptual and technical development and delivery of the CRWR 1100 course.

Nevertheless, it is clear that a sizable amount of start-up funding must be available in order to successfully develop and deliver online courses and programs.

Adequate Time

All three case studies found that instructing (and learning) in the online format appeared to be time consuming. This was mainly due to the large amount of reading (discussion forums) and writing required. Instructional time varied depending on how the online discussions were handled. Some of the instructors moved from responding to every message to responding only to messages where they could add important information. Fellow students were allowed to respond to peer questions. This was at times problematic as occasionally incorrect information was provided.

An additional time saver employed for the CRWR 1100 course was the development of a set of marking symbols the instructors could use to save time while marking online.

In all three studies, there was a rapid learning curve for the instructors, in both the design of the courses, and in the online tutoring. Extra time and training is needed for novice online instructors.

Students also perceived interacting online to be time consuming. However, when student estimates of their time spent working on the course were compared to actual course requirements, students generally fell within the desired range of time. For the UBC EDST 565f course, for example, most students actually spent as much time studying as was intended, and this represented roughly the same amount of time they would be expected to spend on a face-to-face course. However, over half the student respondents said the course took more time than a conventional course and over half who responded said the course took more time than anticipated. While the actual time spent was similar to that spent in a face-to-face course, it *seemed* to take more work. This is possibly due to the sequential and more intense nature of the discussion forums.

Organizational Readiness

With the development of online courses and programs comes the need to revise current policies and procedures in order to accommodate the online student and the online process. The development of UBC's first course toward a postgraduate certificate in technology-based distributed learning posed some challenges to existing operational procedures.

Registration, for example, proved problematic. UBC's automated telephone registration system–Telereg– does not allow graduate students to register for distance courses as part of their graduate program. This was due to a policy established over 10 years ago when graduate level distance courses did not exist. This policy has since been modified but the computer block on Telereg has not yet been removed. Neither the Registry nor Continuing Studies had an on-line registration system for non-credit students. Because most of the promotion of the courses though was done on-line, the bulk of the registrations were received in the week before and the week after the course started. To alleviate this problem, UBC's DE&T unit has now developed its own fully automated on-line registration system, which allows graduate and non-credit students to register, order materials, and pay electronically. (This system is located at http://itesm.cstudies.ubc.ca/info)

Existing UBC Bookstore payment policy also does not accommodate international distance students. The UBC Bookstore requires that they receive payment (which must clear) before they ship materials to students. However, the delay in processing international money orders, which can sometimes take up to a month to process, caused students to wait long periods of time before they received the course materials. This can jeopardize the student's ability to complete the course. In addition, the UBC bookstore does not have a system set up for tracking orders that are shipped. They simply send materials to international students once payment has been processed. Therefore, there was no way of knowing the whereabouts of the course materials after leaving UBC, including whether or not the students received them.

The DE&T solution to these difficulties was to develop a 'one stop shopping' approach to course delivery. Students both register and pay for the course and course materials directly through the DE&T unit. DE&T now takes responsibility for ordering the materials from the bookstore in advance of registrations and directly mailing or sending them by courier to the students when ordered. In this way, the packages sent to international students can now be tracked, and the overall service is now much faster and more convenient for students.

Existing UBC Library policy also does not accommodate all distance learners. The UBC Extension Library supports UBC credit distance students by allowing registered credit students to order (online) up to 30 articles or books per course which are subsequently mailed to students, irrespective of location. The problem exists with service to certificate or non-credit students. At this time, they do not receive service from the Extension Library unless they pay for a library card (regular UBC students receive free access). Consequently, the UBC Library is now piloting access to certificate and non-credit students, to identify the impact on cost and service.

Kwantlen had to develop orientation sessions in order to help their online students install Lotus Notes Client on their home computers which (at the time of the first offering of CRWR 1100) was required in order for students to be able to take the course. This of course would be of no use to students who could not come to campus where the sessions were held, thus negating the potential benefits of access. These sessions were subsequently discontinued when Kwantlen switched to using Netscape as their Internet browser instead of Lotus Notes Client. Netscape required much less instruction to operate.

One of the instructors for the Research Methods course at OISE/UT developed an instructional manual explaining how to use their course software WebCSILE which was posted in the course database in order to help students with their technical problems and reduce the reliance on the technical support staff.

All this leads to a much higher than anticipated time spent on administrative tasks, and consequently unanticipated costs.

Student Readiness

The success of an online course or program is impacted by the readiness of the students to embrace this method of delivery. Primarily, students must have the necessary technology available to them (suitable computer and Internet access) before they can benefit from this type of program. In this way, some costs are transferred from the institution to the learner, as the learner must now provide for his or her own learning tools.

In addition, as with other forms of distance and distributed education, students must be self-directed learners. Their participation in and completion of online courses is entirely up to them. Online students have the additional burden of dealing with technical delays and difficulties that may occur.

The twenty-four hours a day, seven days a week access to the course may also create unrealistic expectations of the course instructor as students may expect their questions to be answered immediately.

Culture may also affect the success of online courses or programs. It was found, for example, that the Mexican students who participated in the UBC EDST 565f course were very outgoing in spite of their difficulty with the English language. Some of the Asian students, however, whose grasp of the English language was quite good, rarely participated in the online discussions and collaborative assignments. This warrants further research.

Conclusion

One of the most significant findings from these studies is that online learning does provide the opportunity to reach new markets. First of all, online learning seems to be particularly appropriate for lifelong learners. There is a clear synergy between the needs of lifelong learners and the nature of online learning.

Secondly, the flexibility of online learning is clearly of great value to many mature adults trying to balance work, family and study requirements. Telelearning gives them access to experts and programs wherever they may be located.

Thirdly, in an increasingly globalized society, many learners seem to appreciate the advantages of international courses and the opportunity to work collaboratively and closely with colleagues across the world, and to have access not only to the course instructors, but to text book authors and experts from other institutions.

Fourthly, for programs struggling with small enrolments for face-to-face courses, the opportunity to widen the range of potential students through online learning may be critical.

For institutions, the benefits provided by the ability to partner with other international institutions is important at both an economic and educational level. Developing joint programs allows costs to be shared and risks reduced. Institutions that recognize the importance of internationalizing the curriculum can use on-line courses to bring in not only international instructors but also international students into a program, thus providing economies of scale.

Lastly, the economics of online courses are complex, fascinating and not transparent. Under the right conditions, online learning can not only be cost-effective, but can actually bring in net profits for an educational institution. This requires quite a different approach to the development and management of teaching. For instance, it requires up-front investment, development of business plans, project management, financial and technical support to faculty, allocation of revenues to those units that take the risk and do the work, and professionalism and a team approach to course development and delivery. (See Bates, in press, for a more complete discussion of these issues).

Limitations to investment in online learning include:

- the need for substantial start-up funds,
- the need for additional time for faculty to learn how to use these new technologies and for students to learn to study effectively online,
- the need to introduce new administrative and organizational procedures that meet the requirements of online learners,
- the need for students to be psychologically ready and financially able to embrace this method of course delivery.

Whether or not online learning can be considered successful and worth the investment will largely depend on the values and goals of the organization. For example, if the organization's focus is on revenue generation or saving money, online learning may not be a good choice, since a large number of online programs are not and cannot be cost recoverable. (They may though be more cost-effective, in terms of learning outcomes for the same dollar spent). Of the three cases examined, only the UBC case was fully cost recoverable, and by only a small margin. If the organization values collaborative learning, increased access for lifelong learners, and the internationalization of the curriculum, then an online program may be of value, even if the costs are the same or slightly more than for a conventional course.

The type of course or course content will also determine the success of an online course or program. Not all courses or course material should be put online. In particular, young students without good independent study habits will find an online course particularly challenging. General principles of good instructional design should apply. The intended market should be taken into consideration and the best interests of the student should be kept in mind.

Finally, in order for an online course or program to be successful, benefits and limitations to the organization and to the student should be appropriately balanced. It is important not only to focus on the costs of developing and delivering an online course or program, but also to focus on potential performance and value added benefits to both the institution and more importantly to the student.

References

Bates, A.W. (1995). *Technology, open learning and distance education*. London: Routledge.

Bates. A. W., & Escamilla, J. (1997). Crossing boundaries: Making global distance education a reality. *Journal of Distance Education, 12*(1/2), 49-66.

Bartolic-Zlomislic, S., & Bates, A. W. (1999). *Assessing the costs and benefits of telelearning: A case study from the University of British Columbia*. [On-line]. Available: http://det.cstudies.ubc.ca/detsite/researchproj.htm

Bartolic-Zlomislic, S., & Brett, C. (1999). *Assessing the costs and benefits of telelearning: A case study from the Ontario Institute for Studies in Education/University of Toronto.* (In preparation).

Butschler, M., & Bartolic-Zlomislic, S. (1999). *Assessing the costs and benefits of telelearning: A case study from the Department of Distributed Learning & Employee Development, Kwantlen University College*. (In preparation).

Cukier, J. (1997). Cost-benefit analysis of telelearning: Developing a methodology framework. *Distance Education, 18*(1), 137-152.

Rumble, G. (1997). *The costs and economics of open and distance learning.* London: Kogan Page.

Biographical Sketch

Silvia Bartolic-Zlomislic is a Research Associate at the University of British Columbia's Distance Education & Technology unit. For the past two years, she has managed a research project led by Dr. Tony Bates and federally funded by the TeleLearning Networks of Centres of Excellence, on the costs and benefits of telelearning. She is currently working with Dr. Bates and IBM Canada on developing a blueprint for a cost-benefit decision making "expert system." She has also conducted research in the areas of learning and memory, marital instability, and diet.

Address: The University of British Columbia
Distance Education & Technology Unit
1170-2329 West Mall,
Vancouver, BC
Canada V6T 1Z4
E-mail: silvia.bartolic@ubc.ca
URL: http://det.cstudies.ubc.ca/detsite/researchproj.htm
Phone: 604-822-8964
Fax: 604-822-8636

Implementing an Interdisciplinary Module Through Computer Conferencing

Ellen A. Becker, Ph.D., RRT
Academic Coordinator
Long Island University

An interdisciplinary course offered through computer conferencing provides the opportunity for students to get together even though their schedules do not coincide. The guidelines for course planning outlined here stem from an experience of providing an interdisciplinary module for students from seven different health professions. Faculty representatives from each of the students' disciplines participated in the course development and delivery. Offering courses at a distance for interdisciplinary teams requires some additional planning. In addition to coordinating course content and methodology, technology training and support must be provided for both faculty and students.

Planning the Project

The planning phase of the interdisciplinary module took place over a one year time period. The participating faculty agreed upon goals for the learning module and received training on the use of the computer conferencing software (WebBoard) from the project coordinator. The primary learning activity was for students to jointly develop a plan of care given a patient's history. Initially, the course faculty attempted to develop the patient histories at a distance using WebBoard. Despite setting timelines for posting care plan ideas and following up with e-mail and telephone reminders, the patient history development didn't progress well over a six-month period. One reason for failing to develop the care plans at a distance related to problems faculty had using WebBoard. The patient histories were finalized in face-to-face meetings and circulated in text for final editing.

Each faculty member needed to select a course within his/her discipline that would support the interdisciplinary content. Since clinical knowledge was required, the faculty chose a senior level or first year graduate course. The faculty wanted to have interdisciplinary students from a similar level of training so that each profession's abilities could be represented equally.

Three faculty members volunteered to form a sub-committee to develop the evaluation instruments. The instrument development process took place over a four month time period. Instruments from prior studies were modified as necessary to evaluate interdisciplinary attitudes (Luecht, Madsen, Taugher, & Petterson, 1990), distance education attitudes (Becker, 1996), stereotypes of other health professions (Parker & Chan, 1986; Streed & Stoecker, 1991), and knowledge gained about smoking cessation (Royce, Sheinfeld Groin, Rendino-Perrone, & Orlandi, 1990; Royce & Orlandi, 1991). Once finalized, these instruments were submitted for approval by the University's institutional review board.

The same sub-committee reviewed drafts of student resource information. Students were provided with text information on paper (how to navigate WebBoard) and electronic information within a resources conference. Web links for smoking cessation literature were also provided.

After conducting a pilot study with four students, the participating faculty met in-person to review the findings, and revisions to the course design were made. Eight faculty members volunteered to monitor the students' care conferences. The faculty members took on tasks that fit into two primary roles. For their faculty discipline role, faculty members tended to issues relating to the students within their specific discipline. As faculty case managers, faculty addressed the needs of student teams assigned to their individual conference boards.

One faculty member served as the project's coordinator. The coordinator set up the student teams, took responsibility for sending out weekly reminders to keep the participating faculty on schedule, provided technical support to faculty and oversaw the functioning of each conference board. Faculty also received some technical support from the University's Information Technologies Division.

Implementing the Plan

During first week of the semester, faculty sent lists of participating students to the coordinator. The project coordinator created care teams that had membership from three or four different disciplines. There was an uneven number of participants from each discipline, which is why the teams did not include membership from all disciplines. Each student was given a team role to facilitate the team's function. The roles used were facilitator, summarizer, reporter and group process (Harasim, Hiltz, Teles, & Turoff, 1995; Mears, 1997).

The discipline faculty trained their students how to use WebBoard and set up e-mail accounts during the first two weeks of the semester. Four hours of training was recommended. Discipline faculty also conducted pre-project assessments through interviews and survey instruments.

In their role as faculty case managers, faculty also set up private conference boards during Week 2. The project coordinator sent each faculty member an e-mail message the previous week listing the conferences to be created, the features of each conference (read only, private, etc.) and a list of e-mail attachments in ACII file format to load into the specific conferences. Templates for the weekly assignments were also provided in electronic form.

Student participation in the interdisciplinary module began during Week 3. Faculty case managers posted the weekly assignments, alerted the appropriate discipline faculty if they saw no participation from their students and answered student questions. Discipline faculty handled the technology questions from their respective students. The initial assignment consisted of having the students introduce themselves to one another. This basic assignment was given so that if technology problems arose, the students wouldn't fall far behind.

Each faculty case manager evaluated the students' final care plans at the end of the four-week module. This evaluation consisted of how well the students addressed the required elements of the care plan, the manner in which they conducted their team roles and the degree to which they integrated content from each other's disciplines. The discipline faculty member set the grading requirement and weight of the assignment grade for their own students. A model for grading was shared with the faculty at a course-planning meeting. Post-project interviews and surveys were conducted one week after the final assignment.

Project Outcomes

Overall, computer conferencing was successful in creating an interdisciplinary environment for health care students. Each participating faculty member succeeded in finding a course that could be supplemented with the interdisciplinary module. Faculty case managers created their own conference boards, posted the resource materials and weekly assignments, and provided their student groups with feedback and support.

Students negotiated the technology and appreciated the opportunity to meet colleagues from other health care professions. Many students had not previously used computers in their course work and valued learning a new skill. A few students attempted to meet members of their care teams when they were present together at campus functions.

The conferencing board was not available several times during the four week assignment. At two separate times, the board was not accessible for three days. Despite this down time, the majority of student teams still persevered with the assignments. The later assignments were modified due to the technical difficulties

The students' overall attitude toward distance education as measured by the distance education attitude scale was positive on the pre-project measure. Attitude ratings declined after participation, however, still remained slightly positive despite the technical difficulties. In their written comments and interviews, student commented on the potential of the methodology.

Students also learned new medical information through their participation in this project. Each case had a component of smoking cessation built-in. On the pre-project assessment most students indicated they knew little information about smoking cessation. Almost every final care plan yielded an appropriate smoking cessation plan. Students also asked one another for information related to each other's medical expertise as well as requested clarification about each other's medical jargon.

The rate of participation of students from the different disciplines was uneven. Disciplines that had active faculty representatives participated at a higher rate. Also, students who had their participation counted as part of a course grade had a much higher participation rate.

Faculty members found the technology workable and time-consuming. The desired consistency in the students' assignments was accomplished across all eight conference boards. Faculty found the assignment templates and their weekly reminders that they received through e-mail helpful. In instances when the faculty case manager did not post an assignment, the coordinator posted it. The number of postings that the coordinator needed to post diminished as the project progressed.

Lessons Learned

This project demonstrated that computer conferencing succeeded in providing interdisciplinary student teams with an opportunity to interact with one another. Faculty participants were enthusiastic about further use of conferencing in interdisciplinary endeavors. The following ideas will be tested in future projects.

Faculty Tutorial

Participating faculty will be asked to complete a tutorial on the conferencing system and some basic concepts of distance education prior to enrolling their students in the interdisciplinary project. This intervention should decrease the support faculty need from the project coordinator while the module is under way.

Increase Student Training for Conferencing System

The original project plan allowed for two 2-hour training sessions to familiarize students with the conferencing system. Due to a variety of reasons, most students only received one training session. The post-project assessments indicated this was insufficient. Most students negotiated the technology successfully by the second week of the module.

Provide Students With Team Roles Experience Prior to On-line Assignment

Some students did not have previous course work with group process. As a result, the concept of team roles was new to them. These students had to negotiate the new concept of team roles in addition to the technology and assignment.

Participation Needs to Be Rewarded

Most students who participated on a voluntary basis did not follow through on their assignments and as a result hindered their team functioning. Students who knew they were receiving a course grade had a much higher participation rate and quality of work.

Set Deadlines With the Learners' Schedule in Mind

Students commented that some of the deadlines were difficult to meet because they did not coincide with their on-campus schedule. As a result, computer access was difficult for some.

Budget in Plenty of Time

It was time-consuming for faculty to read all of the student information. Faculty needed to read the content from their own case manager board as well as the content from all of their students. Since their students participated in teams with students from other disciplines, a lot more content needed to be read.

Identify Faculty Responsibilities That Could Be Given to Graduate Assistants

There was a fair amount of time required to set up each conferencing board. Faculty were happy that they spent the time configuring their boards because they learned a new skill which can be applied in other projects. In the future, it would be helpful to have graduate assistants perform this task.

Faculty Should Identify the Times They Routinely Respond to E-mail

Students were asked to contact their faculty case manager through e-mail. It was frustrating for students to frequently check for a response to e-mail and not see a faculty members' response.

Conclusions

The pre-project planning succeeded in providing several health care students with a supervised interdisciplinary experience. Project planners need to provide faculty and students with adequate technical support so that they can negotiate the technological aspects and spend the majority of their time on the content to be learned. The use of assignment templates made it easy for faculty to post their assignments and maintain uniform expectations across all student teams. Also, it was helpful to have a central coordinator to assure that faculty meet development timelines, keep the project on track and provide technical support.

Acknowledgments

The OT Network on Smoking and Wellness provided partial funding for this project. Also, the following colleagues were instrumental in the success of this project: Anne Hiller Scott, PhD, OTR, FAOTA; Sharon Gutman, PhD, OTR; Linda Zelski, MA, RN, CS; Stacy Jaffee-Gropack, MS, PT; Camille Kiefer, RN, RPAC; Luis Riquelme, MS, CCC-SLP; Mary McManus, PhD, RPh; Evelyn Nieves, MSW, CSW.

References

Becker, E. A. (1995). Test of Fishbein and Ajzen's theory of reasoned action with respiratory care practitioners' intentions to complete their baccalaureate degree through distance education (Doctoral dissertation, University of Wisconsin- Madison, 1995/1996). *Dissertation Abstracts International, 56,* A2523.

Casto, M. (1994). *Interprofessional care and collaborative practice*. Pacific Grove, CA: Brooks/Cole.

Harasim, L. M., Hiltz, S. R., Teles, L., & Turoff, M. (1995). Learning networks: *A field guide to teaching and learning online*. Cambridge: The MIT Press.

Luecht, R. M., Madsen, M. K., Taugher, M. P., & Petterson, B. J. (1990). Assessing professional perceptions: Design and validation of an interdisciplinary education perception scale. *Journal of Allied Health, 19*, 181-191.

Mears, P. (1997). *Healthcare teams*. Boca Raton, FL: St. Lucie Press.

Parker, H. J., & Chan, F. (1986). Stereotyping: Physical therapists and occupational therapists characterize themselves and each other. *Physical Therapy 66*, 668-672.

Royce, J. M., Sheinfeld Gorin, S., Edelman, B., Rendino-Perrone, R., & Orlandi, M. A. (1991). Student nurses and smoking cessation. In P. Engstrom, B. River, & L. Moretenson (Eds.), *Advances in cancer control*. New York: Wiley-Liss.

Royce, J. M., & Orlandi, M. (1991). *Prevention and cessation of smoking by nursing students* (Final Project Report NCI Grant CA41621). Unpublished manuscript, Valhalla, NY: American Health Foundation. (Available from Jacqueline Royce, Ph.D., Royce Associates, 9 Prospect Road, Atlantic Highlands, NJ 07716)

Streed, C. P., & Stoecker, J. L. (1991). Stereotyping between physical therapy students and occupational therapy students. *Physical Therapy 71*, 16-24.

Biographical Sketch

Ellen A. Becker is an assistant professor in the Respiratory Care Division at Long Island University. In addition to her undergraduate respiratory care teaching, she also teaches in and directs a graduate track for cardiopulmonary care. She has been active in educating students and faculty about basic computer literacies and computer conferencing. Dr. Becker earned her Ph.D. in adult education at the University of Wisconsin-Madison in 1995, where she developed her distance education focus. During her 20 years in the field of respiratory care, she has filled several educational and administrative roles and participated in interdisciplinary team education.

Address: Respiratory Care Division
Long Island University
One University Plaza
Brooklyn, NY 10021
E-mail: Ellen.Becker@liu.edu
URL: http://phoenix.liunet.edu/~ebecker
Phone: (718) 488-1540
Fax: (718) 488-1432

Discussion Diagrams: A Method for Illustrating and Quantifying the Interactive Environment of Discussion-based On-line Courses

Kathryn A. Bickel
Research Associate
Horizon Research, Inc

Introduction

Horizon Research, Inc. (HRI) has evaluated a number of asynchronous, discussion-based, on-line courses for mathematics and science educators. The atmosphere of such electronic classrooms is typically a major focus of project evaluations. Considerable attention is paid to questions such as, how interactive are the on-line "classroom" discussions; do discussions tend to be instructor- or participant-directed; and how do course design and questioning strategies influence on-line interactions? Traditionally, HRI has used participant interviews and questionnaires coupled with observations of on-line discussions to answer these questions. While evaluation findings from these methods are often quite meaningful, they are based mainly on participants' perceptions and qualitative assessments of on-line discussions. To better address the evaluation questions, HRI felt a need for more concrete illustrations and quantitative measures of the interactive nature of on-line discussions, therefore the "discussion diagrams" method was developed.

Discussion diagrams are based on sociograms, a social network analysis tool used frequently to study traditional classrooms (Wasserman and Fraust 1994). The method provides both a visual model that illustrates on-line interactions and quantitative indices that describe the level and type of interactions. This paper provides an introduction to the discussion diagram method followed by a mini-case study using the method to examine three different courses within the same teacher enhancement project[1] that, based on observations, were hypothesized to differ considerably in their on-line interactions. Findings from the discussion diagram analysis are then used to relate course characteristics to the on-line interactions.

Discussion Diagrams

The discussion diagrams method consists of two parts: (a) building a model that illustrates the interactions between all participants in a discussion and (b) calculating indices from the model that describe the types of interactions taking place and the extent to which the interactive potential of the discussion is realized. The first step in using this method is to define what is meant by a discussion. For the case study presented later, a discussion is defined as a single thread that focuses primarily on one topic. The analog from a traditional classroom might be a single class session. Other applications of discussion diagrams may require a different definition of discussion—the analyst can define a discussion to fit his/her objective.

---

[1] The project provides graduate level mathematics and science courses to secondary teachers in an on-line distance learning format.

The Model

After defining a discussion, the next step is to build a model. A model consists of "nodes" representing the participants in a discussion (in this case students and instructors) and "connections" representing exchanges between nodes. A simple discussion diagram is illustrated in Figure 1, showing nodes as filled circles and connections as arrows.

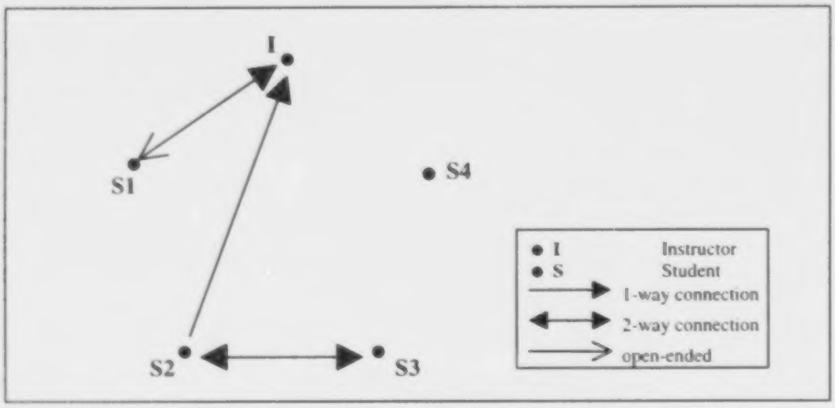


Figure 1
Hypothetical Discussion Diagram

There are three types of connections possible in a discussion diagram, each represented by a different type of arrow (see Figure 1). A connection is made between nodes if at least one communication of any kind takes place between those two people. If the communication is one-way, for example one person asks the other a question, but the other does not respond, then the connection is represented by an arrow pointing from the person asking the question to the receiver. If the communication is two-way (i.e., the receiver then responds to the person who posed the question or the receiver asks the original sender a question) then the connection is represented by a two-headed arrow. Finally, if a communication is phrased in such a way that anyone is welcome to respond, then the connection is considered open-ended and is represented by an open arrow. Both one-way and two-way connections can be open-ended.

Figure 1 provides an example of a hypothetical discussion among a group consisting of one instructor and four students. The hypothetical discussion that led to this diagram is as follows. (Note that you can construct a diagram from a discussion, but you cannot construct a discussion from a diagram.) The instructor directed a message to Student 1, but opened the topic to the entire discussion group (e.g., "Your comment on the reading was insightful. Can anyone think of another explanation?"). Student 2 responded to the instructor's question. Student 3 asked Student 2 about his response. Student 2 replied to Student 3's inquiry.

Meanwhile, Student 1 also responded to the instructor's question. Student 4 did not take part in the discussion.

This example simply shows who spoke to whom and whether or not the exchange was closed or open-ended. It does not portray a situation where multiple exchanges occur between participants, which is often the case in actual on-line discussions. An analyst may want to capture the frequency and quality of exchanges that occur between participants. Such variables could be added to the diagram using arrows varying in width to represent frequency of interactions or in color to represent quality of interactions. This paper addresses the basic method of constructing discussion diagrams and does not explore these additional possibilities; however, analysts are encouraged to modify the method to meet their particular needs.

Interaction Indices

Once a model is constructed, it can be used to calculate indices that quantitatively describe the interactions. The discussion diagram indices provide measures of student contribution and the extent to which the interactive potential of a discussion is achieved. Measures of interactive potential are used to assess the relative contribution of instructor-student interactions and student-student interactions to the discussion. See Table 1 for a description of each index.

Table 1. Discussion Diagram Interaction Indices

Index	**Formula***	**Example Formula**	**Example Values**
Student Contribution	Number of students contributing at least once / total number of students in discussion group	(3/4)*100	75%
Total Interaction Index	Actual number of connections / total possible number of one-way connections [1]	(3/10)*100	30%
Instructor-mediated Interaction Index	Actual number of instructor-student connections / total possible number of one-way instructor-student connections [2]	(2/4)*100	50%
Instructor-independent Interaction Index	Actual number of student-student connections / total possible number of one-way student-student connections [3]	(1/6)*100	17%

* All proportions are multiplied by 100 and represented as percents

[1] Total possible number of one-way connections = $(n^2 - n)/2$, where n = number of nodes

[2] Total possible number of one-way instructor-student connections = $n_i * n_s$, where n_i = number of instructor nodes and n_s = number of student nodes

[3] Total possible number of one-way student-student connections = $(n_s^2 - n_s)/2$

Table 1 also displays indices for the discussion presented in Figure 1. In the hypothetical discussion, student contribution was high; nearly all students contributed at least once to the discussion. However, only about one-third of the interaction potential was realized; that is, only three connections were made out of the ten possible. The discussion was predominately instructor-directed, as can be seen by the relative magnitudes of the instructor-mediated and instructor-independent interaction indices; half of the possible instructor-student connections were made, while only one out of the six possible connections was made between students alone.

Mini-Case Study Comparing Discussions in Three On-line Courses

Based on HRI observations, two on-line discussion-based courses offered by a teacher enhancement program in the summer of 1998 appeared to be largely opposite in the nature of their on-line discussions. One Education course that focused on developing curriculum appeared to be highly interactive with the students engaged in important on-line discussions with each other on a regular basis. In contrast, a science course that focused on Ecology appeared to be much less interactive, with discussions limited primarily to exchanges between instructors and students regarding the content of weekly assignments. The environment of the former course reflected the potential of on-line courses to be stimulating and interactive experiences, while the latter course demonstrated the inverse.

The dichotomy in these two environments provided the framework for a case study investigating the factors that influence on-line interactions. In this mini-case study, the discussion diagram method is used to illustrate and quantify the interactions taking place in representative discussions from each course. To consider the possibility that course content plays a role in determining the level of on-line interaction, an additional discussion diagram analysis was performed on another science course focused on Physics content offered in the Spring of 1998 that was observed to be fairly interactive. Results from this analysis are used to infer how course design and questioning strategies might influence the level of interaction achieved by a course.

Methods

A discussion thread from each course was diagramed and analyzed. Discussion threads were chosen to represent a typical discussion from each course that centered on an important topic related to the course content. Discussions were chosen from those that took place mid-way through the course to avoid unusual circumstances associated with courses' initial start-up and final weeks. In addition, the number of messages in each thread was about the same. A diagram was constructed and interaction indices calculated for each representative discussion.

Results

The similarities and differences in the course discussions are obvious at a glance (see Figures 2 and 3). The diagram for the Ecology course shows few connections involving only a handful of nodes, and the connections are primarily between instructors and students. In contrast, the diagram for the Education course shows a complex web of connections involving all nodes and linking students to both the instructor and to fellow students. A closer look reveals that in both cases the professor initiates the discussion by broadcasting a topic or question to the entire group. From there, the interactions play out quite differently. In the Education course all of the students respond either to the professor or to comments made by other students in the group, and many of the connections are open-ended. In contrast, only a few students respond to the professor's probe in the Ecology course, and the exchanges that follow are primarily between instructors and students. There is only one student-student and one open-ended connection in the Ecology discussion.

Figure 4 shows the discussion diagram constructed for the Physics course. Similar to the other two courses, this discussion is also initiated by a broadcast question, however, in this case, a student posted the broadcast. The resulting discussion shows a level of interaction that is in-between the other two courses; there is a combination of exchanges, both among participants and between participants and instructors. Like the Ecology course, few of the interactions are open-ended.

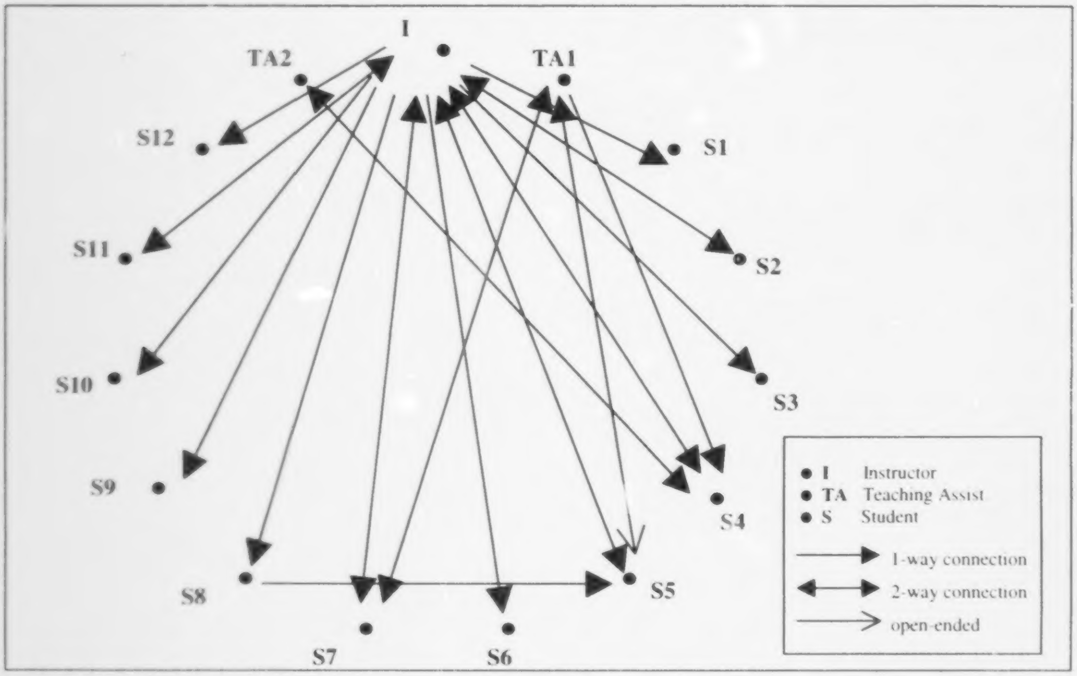


Figure 2
Ecology Course Discussion Diagram

BEST COPY AVAILABLE

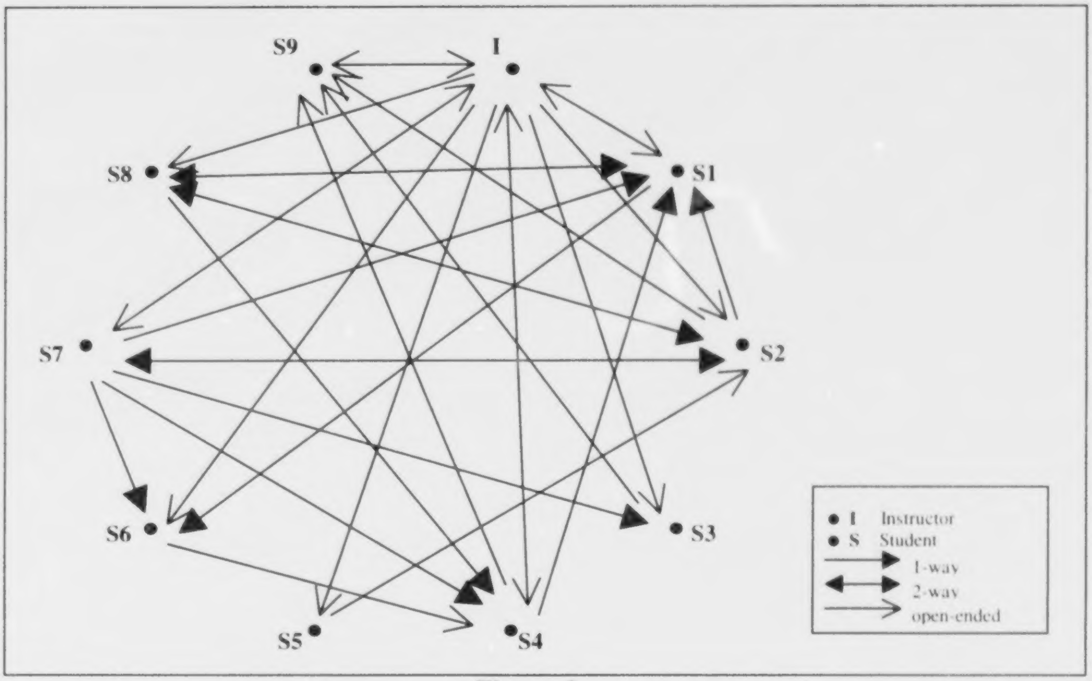

I
S1
S2
S3
S4
S5
S6
S7
S8
S9
● I Instructor
● S Student
1-way
2-way
open-ended

Figure 3
Education Course Discussion Diagram

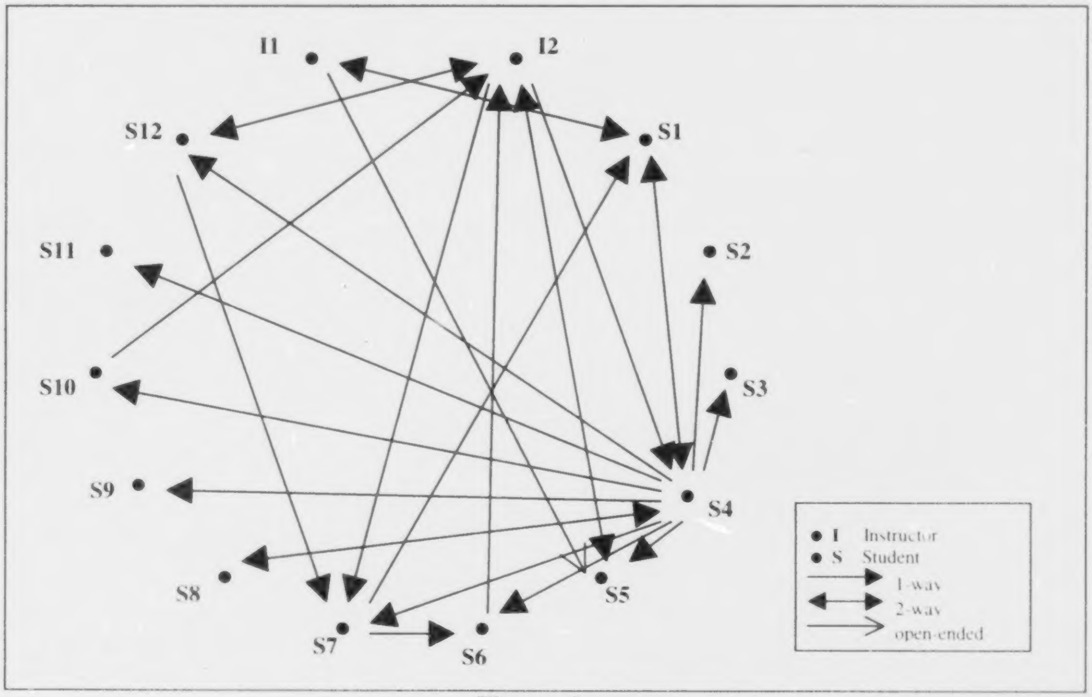

I1
I2
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
● I Instructor
● S Student
1-way
2-way
open-ended

Figure 4
Physics Course Discussion Diagram

The interaction indices calculated from the diagrams quantitatively confirm the impressions made by the models in Figures 2, 3, and 4. The Student Contributions and Total Interaction Indices given in Table 3 reveal that the discussion in the Education course had higher student participation and higher overall interaction than the other two courses. In turn, the Physics discussion had higher Student Contribution and Total Interaction than did the Ecology discussion. In addition, the relative magnitude of the Instructor-mediated and the Instructor-independent indices confirm that the discussion in Ecology was predominately instructor-directed, whereas the discussion in the Education course was nearly equal in instructor and student-directedness. Similar to the Education course, the Physics discussion indices were closely balanced between Instructor-mediated and Instructor-independent interactions (see Table 3). However, the Physics discussion had the lowest Instructor-mediated interaction index of all three courses. The student-initiated broadcast could account for the relatively low instructor-mediated index.

Table 3. Interaction Indices Comparing Case Study Courses

	Education	**Ecology**	**Physics**
Number of participants	9	12	12
Number of instructors (professor and TA's)	2	3	2
Participant Contribution	100%	50%	67%
Total Interaction Index	47%	16%	24%
Instructor-mediated Interaction Index	50%	44%	33%
Instructor-independent Interaction Index	0.47	2%	21%

Conclusions

The discussion diagram analysis confirmed observational data by illustrating and quantifying interactions within the courses. The analysis shows that the Ecology and Education discussions were clearly different in the extent to which they were interactive and student-directed. The analysis also suggests that level of interaction is not necessarily determined by course content; a discussion from a second science course was shown to be moderately interactive.

It is likely that the differences in the on-line environments were influenced by differences in course design. In the Education course, participation in on-line discussions was emphasized as very important; forty percent of each student's grade was based on the quantity and quality of his/her contributions to the on-line discussions. The instructor for the Education course was obviously sensitive to the uniqueness of an on-line course. In fact, the first assignment elicited feedback from participants on the strengths and weaknesses of the on-line discussion format. In addition, the instructor designed the course such that each week there was a specified discussion topic that was distinct from the written homework assignment. The importance of discussion was also clearly stated and reinforced in the Physics course in which there was a highly structured point system rewarding students for contributing to the discussion. In the Ecology course, on the other hand, clear expectations and requirements for the on-line discussions were not provided. The information that was available simply indicated that on-line discussions would be centered on the weekly course assignments.

There were additional differences in the design of the courses. The Education course had the largest number of participants and the highest student to teacher ratio (28 participants, 1 professor, 1 TA) Both science courses had 12 participants each. The Ecology course had one professor and two teaching assistants, whereas the Physics course had two professors and no teaching assistants. After the first week of discussion, the Education instructor divided the twenty-eight students into three discussion sub-groups with nine students in each to encourage a more interactive discussion environment. The discussion groups were rearranged each week and students were sometimes assigned to groups and other times were allowed to pick their own. The discussion from the Education course that was analyzed above came from an assigned sub-group. Neither of the science courses divided students into sub-groups; however, the total number of students in each course was only twelve to begin with.

The three courses were similar in that the discussions were centered on specific topics (i.e., discussion topics and weekly assignments). However, the instructors' styles were quite different for developing those topics. The instructor for the Education course introduced discussion topics that encouraged students to elaborate on the reading materials, but not recite them, while sharing their own insights and experiences. In addition, the discussion topics were distinct from the homework assignments. In the Physics course, students were responsible for posting the majority of the weekly discussion topics. Often the topics related to issues from the course readings that the students themselves felt were important to cover, especially material that was complicated and required that students help each other to understand it. The Ecology instructor had a somewhat more traditional style of questioning and required students to turn in written responses for the weekly assignments. The more directed questions combined with students' written responses appeared to limit the extent to which students could take a discussion topic and "run with it". Instead, exchanges on-line were limited to either the professor or the teaching assistants replying to students regarding the content in their assignments as they turned them in.

While this analysis does not directly link course and instructor characteristics to on-line environment, it does quantify the differences among the on-line interactions of three courses that are similar in some ways but differ considerably in elements of design and questioning strategies. From these differences it can be inferred that the following factors are important for an interactive on-line environment:

- communicating clearly the expectation that on-line discussions are central to the course;
- structuring the course in a way that encourages on-line interactions;
- establishing flexibility for making mid-course adjustments to further encourage on-line interactions; and
- employing questioning strategies that provoke thoughtful discussions and encourage widespread contributions from students.

The link between course and instructor characteristics can be established in future applications of discussion diagram analysis. Interaction indices calculated from several different courses could be correlated to defining course characteristics. Such an approach has the potential to provide convincing evidence that certain elements of course design and implementation encourage interactive on-line environments.

Reference

Wasserman, S., & Faust, K. (1994). *Social network analysis methods and applications.* United Kingdom: Cambridge University Press.

Biographical Sketch

Kathryn Bickel is a Research Associate at Horizon Research, Inc. (HRI) in Chapel Hill, North Carolina. HRI is a private contract research firm that specializes in evaluating science and mathematics education reform initiatives. At HRI, Ms. Bickel manages the evaluation of Georgia Industrial Fellowships for Teachers, based out of the Center for Education Integrating Science, Mathematics and Computing at Georgia Institute of Technology. In addition, she collaborates with others at HRI on the evaluations of a number of programs such as the National Teacher Enhancement Network, Virtual Professional Development School Consortium, North Carolina Leadership Network for Earth Science Teachers, and North Carolina State University's EMPOWER project. Ms. Bickel received a Bachelor's Degree in Integrative Biology from the University of California at Berkeley and completed graduate level coursework and research in Biology at San Diego State University. She has extensive experience in the biological sciences and has formal training in research design and statistical analysis.

Address: 111 Cloister Court, Suite 220
Chapel Hill, NC 27514
E-mail: kbickel@horizon-research.com
URL: www.horizon-research.com
Phone: (919) 489-1725
Fax: (919) 493-7589

Using Distance Technology in Professional Development and Training

Donald A. Bille, Ph.D., RN, Clinical Education Manager
Health Management Services
Kaiser Permanente of the Mid-Atlantic States Region
Rockville, Maryland

Context

Kaiser Permanente is a large not-for-profit managed health care group practice caring for nearly nine million members nationwide. The Mid-Atlantic States Region of Kaiser Permanente provides health maintenance and disease treatment to 540,000 members , with 29 medical offices spread throughout Northern Virginia, Maryland and the District of Columbia. Budget cuts, made in an attempt to keep health care costs down, eliminated all but two clinical education positions. The need for professional development and training nearly 5000 physicians, nurses and other staff, however, increased.

Two Clinical Education Managers are charged with the responsibility to put the "managed" into managed care. It is cheaper to prevent disease complications than it is to treat them. Four initiatives for intensive education and training include asthma, diabetes, heart disease and adults aged 65 and over. These four initiatives tend to be the most expensive - especially when care is NOT managed properly. This presentation will describe the evolution of the use of distance technology to provide professional development and training in care of diabetes and those adults aged 65 and over, the initiatives that I have been given the responsibility to orchestrate.

Introduction

Kaiser Permanente physicians and staff, not unlike staff in other organizations, had become accustomed to "sage-on-the-stage" training, in which a training session was taught face-to-face. It soon became obvious that live training sessions would no longer be feasible or economical, so a means to bridge the distance between the 29 medical office buildings had to be found. Three of the 29 facilities already possessed video teleconferencing capabilities. A cost-analysis which compared the expansion of video teleconferencing to all facilities versus the start-up cost of a new (audio only) solution was done. Integral to this cost-analysis was examination of the content of a typical training session. It was determined that most of the training did not require video to achieve the sessions' objectives.

Audio-Only Option Chosen

In spite of the fact that expansion of video capabilities was the desire of several administrators, the discrepancy between costs of video expansion or audio start-up was too huge to ignore. Once the decision was made to accept the audio-only option, audio soundstations had to be purchased, each facility had to be wired for an analog telephone line, and a means to bridge all 29 audio soundstations had to be found. An investigation into the purchase of an audio bridge was found to be cost-prohibitive, so a contract was established with a vendor.

Nearly six months elapsed while carrying out all the preparations, but finally, in July of 1998, "Sound Bytes" was born. The first audio broadcast was done solely for the purpose of testing and using the new equipment. Without the luxury of having someone designated as "site coordinator" in each center, the Facility Service Supervisor was given the add-on responsibility of site coordination. That first broadcast was mostly giggles and laughter as each site experienced being able to broadcast and receive audio from each location. It was decided that there would be one broadcast per week, on Wednesdays, from 12:30 to 1:00 p.m.

Evolution of Distance Teaching and Learning

Kaiser Permanente, like many large organizations, has a vast wealth of talent and knowledge. After conducting three broadcasts myself, done primarily to demonstrate the capabilities of the audio medium, physicians and other staff were recruited to speak on various topics. It soon became obvious to higher level administrators that the audio-only broadcast was a cost-efficient and cost-effective means to deliver professional development and training. Since potential speakers did not have to travel to any central location, but rather could broadcast from the facility in which they worked, it also became obvious how much travel time and mileage was being saved.

Old habits, as any trainer knows, are hard to die off. There remain a staunch few that believe they cannot learn by an audio-only medium, but nevertheless, distance teaching and learning was gaining in acceptance and recognition as an effective tool. Further evolution of distance teaching and learning will be illustrated with two programs, diabetes care and care of the adult over the age of 65. These programs will also compare and contrast quantitative versus qualitative evaluation measures used to determine program effectiveness.

Quantification Evaluation: Diabetes Development and Training

The American Diabetes Association has defined a recommended curriculum for all health care providers who care for diabetics. In addition, Kaiser Permanente has developed local Clinical Practice Guidelines which are "suggested" for use with each diabetic patient. The guidelines spell out such things as diagnostic criteria, physical examination, glycemic (blood sugar) control and therapy.

An extensive needs assessment was conducted, using not only the nationally recognized curriculum, but also the local clinical practice guidelines. A tally of the needs assessment was used to determine training topics and priorities. In recognition of November as National "Diabetes Month," one of the most successful and well-attended "Sound Bytes" broadcasts to date ("Declare War on Diabetes") was held. More than 100 physicians and staff attended the half-hour broadcast for an average cost of approximately $1.00 per person.

Pre- and post-tests were created to accompany the Clinical Practice Guidelines. The tests were judged to have face and content validity, and may actually have some predictive validity. The pre-test is used as an "advance organizer" to guide the learner's attention to the most important points to learn by reading the guidelines. The same test is given as a post-test. Staff is NOT concerned that the learner might learn only that information needed to answer test questions because the test covers all of the desired learning outcomes. While a few staff already had high pre-test scores and experienced little change in the post-test scores, there were some who gained in excess of 60 points between pre- and post-testing.

Through the use of an extensive data warehouse, evaluation measures of the implementation of clinical practice guidelines can be achieved. For example, the data is able to report on the use of three clinical indicators (specific eye exams, use of a specific blood test, and the prescription of aspirin in patients who have a family history of heart disease) by facility, area, or the entire organization. In some instances, data is also available to report on individual physicians and their use of the clinical indicators.

A complete distance education package is being created and distributed to ninety medical units that care for diabetics. The package will include printed material, audio tapes of two different "Sound Bytes" broadcasts, and a recordable CD. Beginning in September of 1999, staff will also be given the option to study the entire package via the internet.

Once a distance teaching package has been put together, it is relatively inexpensive to distribute -
(Including costs of a 3 ring binder, tabbed indexes, printing, tape dubbing and dubbing of recordable CDs, with a total cost of less than $10.00 per package.)

Care of Adults Aged 65 and Older

There is no nationally recognized authority on caring for older adults, so the approach to creating a distance teaching package was markedly different from that used for diabetes. A physician-advisor to the older adult program identified ten of the most important concepts to know when caring for an elderly patient. These ten concepts were then used as a needs assessment, asking physicians and staff to rank order the concepts as they viewed their importance.

This ranked list was then used to put together a distance teaching-learning package. Three different "Sound Bytes" broadcasts were used to provide background information on "Care of the Older Adult," and an all-day workshop was presented to capture more of the topics on the ranked list. The evaluation of these activities was done using a qualitative evaluation (some call this a "smile sheet" or a "satisfaction quotient.")

Techniques to Increase Participant Interaction

Previously, many broadcasts had included speaker-content, and learner-content interactions. Interactions between learners, as well as speaker-learner interaction were lacking. Under normal circumstances, staff at peripheral locations seem to be reluctant to ask questions or to make comments, since they know they will be heard by everyone who is tuned in. However, several audio broadcasts were conducted with numerous speakers, spread out through the 29 different medical facilities. An agenda for each of these broadcasts was given to each speaker, and the session was coordinated at a central location. The central coordinator for the session would transition to the topic to be discussed as a means to cue that speaker. It took place so smoothly that listeners did not know that the speakers were at a distant location.

In several different broadcasts, staff were contacted prior to the session and they were given "planted questions," as a means to make a broadcast more participative. A case study which presents a "typical older patient" will be placed on our website in September. This will encourage debate, discussion, disagreement, and a chance to voice various opinions. Physicians and staff who might be too shy to interact via the audio medium might be more likely to participate in writing.

What We Have Learned

It is hard to believe that it has only been one year since the debut of the "Sound Bytes" audio broadcasts. The two Clinical Education Managers have learned that issues, such as: office politics, ownership, a transparent medium, prior experience of presenters, training time commitment, budgeting, and cost-effectiveness are all factors that must be considered when deciding whether or not to switch training efforts to a distance teaching and learning approach.

Even though a speaker may have had numerous opportunities to talk to a live audience, when faced with "speaking to a machine" it can still create nervousness. Utilizing a distance medium does NOT reduce planning time. It has been our experience that it takes approximately four hours of trainer time for each 30 minute broadcast. This time is needed to recruit speakers, handle all of the "administrivia" and paper work, and sending out certificates of attendance. (If the broadcast time was longer than 30 minutes, it probably would not involve more trainer planning time.)

The audio medium is NOT transparent—any noise in the background will be transmitted along with the presenter's voice. Staff need to be reminded to put their soundstations on "mute" for the broadcast. During one broadcast, we heard two individuals discussing what they were having for lunch.

Summary

There are still physicians and staff who believe that learning can only occur when the speaker is live: the-sage-on-the-stage concept. However, we will continue to utilize the audio-only medium, providing high quality learning experiences for physicians and staff. As we mature in the use of distance learning technologies, and continue to look for more ways to be interactive, it is hoped that staff can be swayed from a sage-on-the-stage model to one that is more like a guide-on-the- side.

Biographical Sketch

Don Bille grew up on a farm in central Wisconsin. He experienced distance teaching and learning as a grade school student: the University of Wisconsin aired a weekly radio broadcast, "Professor Gordon's Music School of the Air" as part of a music education program. He received his master's degree in Nursing from Marquette University in Milwaukee, Wisconsin, and his Ph.D. from the Department of Continuing and Vocational Education at the University of Wisconsin. He completed the Certificate in Distance Education program at the University of Wisconsin in May of 1999. For nearly ten years, he has been the Clinical Education Manager in the Department of Health Management Services of Kaiser Permanente, based in Rockville, Maryland.

Address: Health Management Services
Kaiser Permanente
2101 East Jefferson
Rockville, MD 20849
E-Mail: donald.bille@kp.org
URL: www.mapmg.com
Phone: (301) 816-6103
Fax: (301) 816-7475

The National Guard Distributed Learning Initiative: A Systems Approach

Lt. Col. Craig Bond, Distance Learning Team Chief
National Guard Bureau, Army Training Division

Fred Poker, Associate
Booz-Allen & Hamilton, Inc.

Joseph Pugh, Senior Analyst
Richard S. Carson & Associates, Inc.

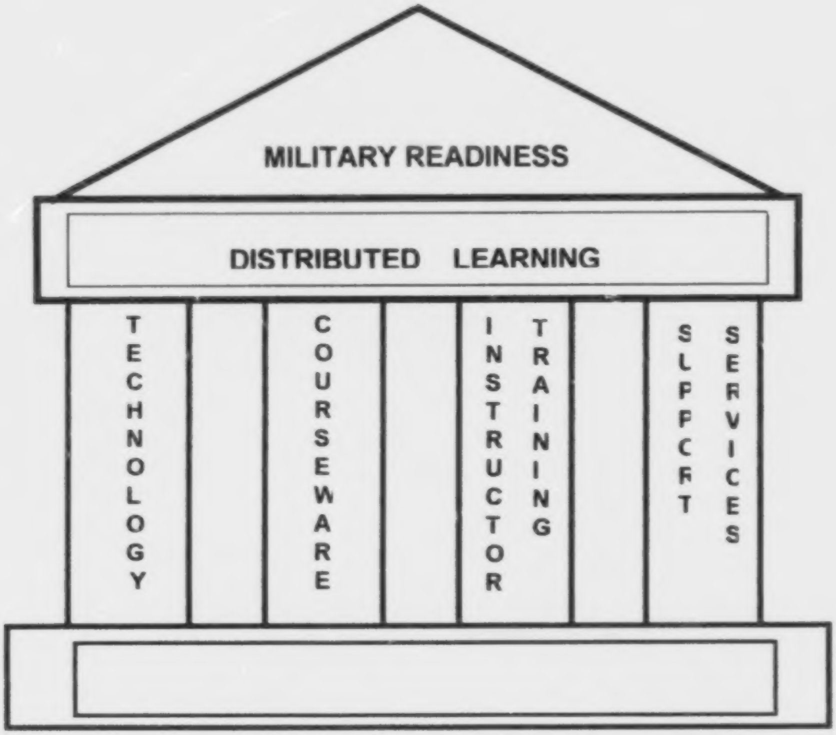
National Guard Roles and Missions

The National Guard has a unique Federal-State status wherein it fully supports the National Command Authority and the global needs of the Active Army and Air Force. The National Guard is a mainstay of the Nation's ability to conduct and sustain combat operations. In addition to support for active Army and Air Force overseas missions, the National Guard has primary responsibility for the continental defense of the United States. In its Federal role, the National Guard is currently serving around the world, including Operation Joint Venture in Bosnia. The Guard serves as a State military force when not federalized by the President. In its State role, the National Guard can be mobilized to support civil authorities in response to natural disasters, civil disturbances and other emergency situations.

As the Army and Air Force downsize in response to the end of the cold war, the National Guard will take on new, more sophisticated and more complicated roles. The Army National Guard (ARNG) currently constitutes 55% of the total Army's combat maneuver, 46% of its combat support, and 25% of its combat service support forces. The Air National Guard (ANG) is an integral part of U.S. Air Force operations to include air defense of the continental United States and air refueling operations around the world. While the active Army and Air Force are based primarily at large military installations, the National Guard is geographically dispersed throughout 3300 communities.

The Distributed Learning System

The National Guard Distributed Learning (DL) Initiative is supported by the four pillars that comprise our system: technology (distributed training network and classrooms), courseware, instructor training and learner support services. Too often, managers think of distributed training and education in terms of training technology. While technology is a necessary element of the structure, the technology is not the training. Our experience has shown that technology can be applied effectively only when course materials are designed (or, in the case of existing materials, reconfigured) for delivery via DL means, when staff, instructors and learners are adequately prepared to exploit the full potential of that technology, and when support mechanisms are in place that are tailored to the unique requirements of instructors and learners operating in the DL environment.



Technology

The National Guard Distributive Training Technology Project (DTTP) is a state-of-the-art, technology-enabled solution for improving national security and military readiness that provides high-speed access to training events and materials and provides commanders with advanced communications capabilities. Through the DTTP, the National Guard will be able to conduct cost-effective training for soldiers, airmen and units via distributive learning media and methods. Under the concept of shared usage, it will also assist in economic and community development through public access to some of the best educational resources in the nation. Shared use of DTTP facilities will allow broad community access to high-end learning technologies on a space-available basis at affordable costs. The DTTP will include classrooms in all 50 States, the District of Columbia, Puerto Rico, The Virgin Islands and Guam, making it one of the first truly national distributive learning networks.

Courseware

Courseware development requires as challenging an effort as the installation of networks and classrooms. New course materials must be redesigned— and existing materials must be reconfigured—to allow for DL delivery. The Army and Air Force courseware development efforts will eventually provide DL materials for more than one thousand courses to train Army and Air National Guard troops.

The US Army uses the "one course, one standard" approach to DL courseware development. That means that courseware designed for DL delivery must teach the same performance standards as traditional resident instruction even though the program of instruction may rely on a variety of media and methods for course modules. The development of a DL course begins with an review of the critical tasks contained in the program of instruction and a validation of the learning objectives. Instructional content will be redesigned as necessary based on the task review. Course materials will be digitized to facilitate multi-media development. A media analysis will determine the most appropriate method (or methods) for delivering each task. Training development teams then begin the DL courseware design.

The US Army Training and Doctrine Command is responsible for configuring over 500 military occupational specialty and professional development courses for delivery - in whole or in part - to Army National Guard soldiers via DL means. The National Guard Professional Education Center has the responsibility for designing and delivering instruction for skill sets that are unique to the Army National Guard operating environment. This effort encompasses an additional 96 courses. The Air National Guard Training and Education Center, working with the Air Force Distance Learning Office, has implemented a similar program for Air National Guard courses.

Instructor Training

While the "one course, one standard" concept means that DL instructors will teach the same subject matter as in resident instruction, DL technology will be new to all but a few instructors. Instructors must be not only familiar with, but comfortable with, DL equipment and instructional methods and their new roles and responsibilities. The National Guard Professional Education Center has designed a 46-hour DL Instructor Training Course to teach instructors how to utilize the entire range of DL equipment included in the classrooms now being installed throughout the 54 States and Territories. Instructors will be exposed to DL theory, adult learning theory, the operation of classroom equipment and the methods of conducting instruction using that equipment.

Support Services

Support services for all participants in the DL arena must be planned for, designed and implemented prior to the start of DL activities. The National Guard network is managed from the Network Scheduling and Assistance Center (NSAC) located in Arlington, Virginia. This center is equipped to provide technical assistance to local DL classroom mangers. Once a classroom is installed, technical and management training for site facilitators is conducted. The existing Army Training Requirements and Resource System—a computerized forecasting, scheduling and enrollment system—is being continuously adapted to provide training managers with detailed information on the availability, locations and media employed in DL courses. A DL orientation video will soon be available to demonstrate how learners' roles, responsibilities and needs will change when they study and learn in a DL environment.

Project Milestones

Long-term milestones for achieving Distance Learning's potential impact on National Guard readiness include:

- **2003.** The power of DL to improve readiness is measurable in terms of accelerated delivery of training and improved soldier performance. DL also improves recruiting and retention by providing increased access to soldier education needs.
- **2010.** A consistently high standard of readiness at all force levels is achieved and maintained by full integration of networks, classrooms, qualified instructors, courseware and training simulators. Accelerated training and realistic organizational training simulations enable rapid response to emerging/evolving missions.
- **2020.** Military occupational specialty training and professional education are provided on-demand, anywhere, any time. Military readiness is accomplished through the latest, most advanced training methodologies, state-of-the-art communications, and information and simulation technologies.

Summary

As this report demonstrates, the National Guard is actively implementing a world-class distance learning network throughout all 54 States and Territories to deliver training to maintain soldier and airman readiness for National Guard missions. By bringing classrooms and instructors to learners, distance learning promises a significant opportunity that the National Guard can use to maintain the required readiness levels. Additionally, this initiative breaks new ground in the cost-effective use of Congressionally appropriated funds. When not in use in support of National Guard missions, the NGB network will be made available for community development and improved civilian educational opportunities on a cost-reimbursable basis.

Biographical Sketches

Lieutenant Colonel Craig Bond is assigned as the Distance Learning Team Chief, Army Training Division, National Guard Bureau. He is tasked with improving readiness by implementing training components of the National Guard Distance Learning Program. Prior to this assignment, Lieutenant Colonel Bond served as an Army National Guard liaison at the U.S. Army Training and Doctrine Command. His aviation assignments include assault helicopter pilot in Vietnam; unit trainer, instructor pilot and platoon leader in the Maryland Army National Guard; standardization instructor pilot, Fort Rucker, Alabama; and aviation safety officer at the National Guard Bureau. Lieutenant Colonel Bond holds a bachelor's degree in English Literature and a master's degree in Administration. He is currently completing post-graduate work in distance learning.

Address: Army National Guard Readiness Center, ATTN: NGB-ART-I, 111 S. George
Mason Drive, Arlington, VA 22204

E-mail: bondc@ngb-arng.ngb.army.mil
URL: http://www-ngb5.ngb.army.mil/tng/arngdl.htm
Phone: (703) 607-7307
Fax: (703) 607-7383

Fred Poker is an Associate at Booz-Allen & Hamilton on the company's Distributive Training Technology Program team supporting the National Guard Distributive Training Technology Program. A former Fellow at Harvard, he also holds an MPA from the university's Kennedy School of Government where he specialized in strategic computing and telecommunications. He also holds degrees in Community Development, Social Work and History. His experience in designing, establishing and managing collaborative communications projects spans more than twenty years. His focus has been on the strategic use of communications and information technologies to strengthen education and training, health services, and economic development in the United States, Europe, Russia and the Middle East. He has been an invited lecturer and workshop leader at the Edinburgh International Science Fair, Harvard University, and at British Government programs conducted in England, Ireland, Moscow, and Lisbon. Mr. Poker has executed key roles in managing a DOD-sponsored center of excellence for distance education and telemedicine initiatives in remote and medically underserved areas.

Address: Booz-Allen & Hamilton, Inc. 8283 Greensboro Drive McLean, VA 22102
Email: poker_fred@bah.com
URL: http://www.bah.com
Phone: (703) 917-5216
Fax: (703) 902-3265

Joseph Pugh is a Senior Analyst with Richard S. Carson & Associates, Inc. where he works as the training and education liaison on the National Guard Distributive Training Technology Project support team. A retired Army Lieutenant Colonel, he served as the National Guard Bureau project officer for Distance Learning and as the project manager for the re-engineering of the Army National Guard Training and Education System. Previous assignments include the Army National Guard liaison at the US Army Air Defense Artillery School, an Assistant Professor of Military Science at Drexel University and as an Evaluation Team Chief with the US Army Southern European Task Force. Mr. Pugh holds a B.S. in Political Science from Drexel University, an M.A. in Management from Webster University and an MBA from Averett College. He is currently enrolled in the Organization and Management Ph.D. program at Capella University.

Address: 1 Skyline Tower, Suite 2602
5107 Leesburg Pike
Falls Church, VA 22041
Email: pugh@carsoninc.com
URL: http://www.carsoninc.com
Phone: (703) 379-5700
Fax: (703) 379-5701

The Use of Learning Technologies in Modern Business Organizations

Theresa J. Bowen, Ph.D.
Independent Consultant and Professional Educator
Bowen Consulting

> *"Today, success in the global marketplace means creating and applying new knowledge, which is to say new technology faster than one's competitors. That is the fundamental law in this competitive world."*
>
> Eric Bloch, Distinguished Fellow, Council on Competitiveness
> (as cited in Price, 1996)

Phenomenal technological advances are revolutionizing the training industry (Billington, 1996; Flynn, 1993; Galagan, 1996). Human Resource Development (HRD) Executives forecast that in the next millennium an average of 35%, up from 11%, of training time will be delivered by learning technologies (ASTD National Report, 1997). According to the National Report, (1997) HRD Executives forecast a tremendous increase in the use of learning technologies for training the future work force.

Many of these technologies have the capacity to change training from classroom instruction to on the job learning. These technologies are referred to as learning technologies. Distinctions and definitions of learning technologies often create perplexity because they combine two separate phenomena (Bassi, Cheney, & Van Buren; 1997, Piskurich & Sanders, 1998; Van Buren, 1998). Learning technologies integrate presentation methods of interactive multimedia, video conferencing, and electronic performance support systems (EPSS) with a distribution method such as, CD-ROMs, the Internet/Intranet, and video. For example, interactive multimedia can be delivered via CD-ROM, Intranets or the Internet. According to Bassi, Cheney, and Van Buren's Training Industry Trends Survey (1997), the use of electronic technologies to deliver information and enable the development of skills and knowledge will revolutionize learning in the workplace.

Learning technologies does not have a universal accepted definition. To some, it means any technology to deliver training, including paper and pencil and to others it means only electronic delivery methods used for training. For this study, learning technologies are the use of electronic technologies that deliver information and facilitate the development of skills and knowledge (Van Buren, 1998). With the intensifying speed of change in technology and knowledge, adult learners have a choice whether to continue to become life-long learners or allow their knowledge, skills and abilities to slide into obsolescence (Billington, 1996). The same principles apply to companies: Those who fail to continually teach and train employees quickly slide into antiquity and obsolescence (Bassi & George, 1997).

A traditional assumption of formal training was that multiple learners moved through a body of course material in unison, usually guided by a single training expert. Unfortunately, this approach lacks flexibility. The underlying assumption is not always realistic: a large group of learners who can start at the same point in the learning content, work at the same speed, and finish the training program with the same knowledge and skills. Similarly, traditional training techniques require the availability of competent trainers. In many organizations, and for many learners, when these conditions cannot be met, training needs remain unfulfilled (Woollard & Morrison, 1995). With the use of learning technologies, these training needs can be met, thereby increasing the flexibility of training and the speed with which training content can apply on the job (Cauldron, 1996). Learning technologies can also increase the speed of knowledge use by decreasing the amount of time required by individuals to learn new material (Kahn, 1997).

A major shift is occurring in workplace training. Many Human Resource Development (HRD) practitioners' interests are high but they are unsure as to what to select and how their training needs can be met with learning technologies (Marquardt, 1996). Many believe (Flynn, 1993; Galagan, 1996; Schwartz, 1996) that organizations that tackle the opportunities inherent in the new technology wave of training will capture important competitive advantages, while those organizations that fall behind will run in a race to adopt these methods or be forced out of business altogether. Further, learning technologies are being promoted as the most cost-efficient and time-saving training tool ever used in organizations (Caudron, 1996; Filipczak, 1992; Greengard, 1993; King, 1997). The use of learning technologies were purported to be transforming the way businesses work (Belohlav, 1996; Kahn, 1997; Schaaf, 1997;). Learning technology delivery methods are helping companies get leaner, smarter, and closer to customer needs (Langston, 1997; Sherman, 1993). However, there is insufficient information concerning what, how and why learning technology delivery methods are being used for training programs.

Purpose

Therefore, the purpose of this quantitative and qualitative descriptive study was to investigate the following issues that are critical to expanding our understanding and use of learning technologies in the modern workplace.

- The types of learning technology delivery methods used for training
- The context of training in which learning technologies are used
- The amount of training time delivered by learning technologies versus other delivery methods
- The criteria used to decide which learning technologies to implement
- Barriers faced by HRD practitioners in using learning technologies
- The budget for designing, developing, implementing, and purchasing learning technologies
- The importance of investing in learning technologies
- The evaluation of learning technologies

Research Design

The research questions were to determine (a) which organizations used learning technologies, (b) if they have had a training program in existence for more than one year, and (c) if they employed at least one full-time HRD practitioner who conducted training programs. From the response of the initial screening phone interviews 40 organizations fit the predetermined criteria for inclusion in this study. Phase two of the study was to stratify the organizations into seven industry groups to determine a purposeful representative sample to interview. The target groups for stratification were (a) manufacturing, (b) process organizations (c) hospitals, (d) financial institutions (e) retail industries (f) service industries, and (g) educational organizations. A stratified cluster sampling technique was used to determine the organizations used in each category. Focused interviews were conducted with organizations that agreed to be part of the follow-up study.

Description of the Population

The target population for phase one of this study were a stratified cluster sample of all the organizations that were contained in the Major Employers List (MEL) with one hundred or more employees from Toledo, Ohio Chamber of Commerce, 1997. The rationale for selecting profit-oriented organizations in the Greater Toledo, Ohio Area was that studies have been conducted on learning technology use among Fortune 500 companies, while little or no research has been conducted toward HRD practitioners in smaller equally, dynamic organizations. The rationale for selecting organizations that employed one hundred or more employees was predicted on the fact that today's global market is open to all comers. These companies are representative of companies that are typically found throughout the United States.

Summary

This descriptive study determined the what, how, and why learning technology methods were used for training in organizations. The data obtained in this research study provided a rich source of information for organizations in industry and education that provide training using or planning to use learning technology delivery methods. Reports of learning technology use for training are
used at various levels and in different ways to respond to meeting today's business needs. It is important to consider all the internal and external forces that influence the use of learning technologies to develop and train employees. Skills training will continue to be a dominant focus for organizations as new jobs are created. Technology has been and will continue to be a crucial factor in the delivery of employee training as it continues to grow. Human Resource Development (HRD) practitioners, managers and academicians who want to contribute strategically to their companies' needs has to be knowledgeable enough to use new learning technologies in a low-cost, highly effective way to benefit their organizations.

References

Bassi, L. J., & Chaney S., & Van Buren, M. E. (1997). Training industry trends. *Training & Development, 51,* 46-59.

Bassi, L. J., & George et al. (1996). The top ten trends. *Training & Development, 50,* 28-53.

Billington, D. D. (1996). Seven characteristics of highly effective adult learning programs. *New Horizons for Learning.* [Online] Available: URL: http://www.newhorizons.org

Belohlav, J. A. (1996). The evolving corporate paradigm: Corporate strategy future in reinventing business itself in search of competitive essence. *Business Horizons, 39,* 11-22.

Caldron, S. (1996). Your technology primer. *Personnel Journal, 75,* 119-137.

Filipczak, B. (1992). What employers teach (a demographic view of the students, the curriculumand the training methods of the corporate education system). *Training, 49,* 43-54.

Flynn, M. & Flynn, L.K. (1993). Future shock: Workplace 2000. *Ingram, 19*, 79-81.

Galagan, P. (1996). The workplace in 2020: Three scenarios, *Training & Development,* [Online] Available: URL http://www.astd.org/industry/trends/galagan.htm

Greengard, S. (1993). How technology is advancing HR. *Personnel Journal, 72*, 80-90.

Kahn, R. M. (1997). 21st century training. (sales training on the internet) *Sales & Marketing Management, 149,* 80-84.

King, J. (1997). Teaching over the net. *Computerworld, 31,* 59-64.

Langston, D. (1997). Integration drives next-generation efficiencies. *Computing Canada, 23,* 58-59.

Marquardt, M. J. (1996). Cyberlearning: new possibilities for HRD. *Training & Development, 50,* 56-60.

National Report. (1997). *HRD executives forecast tremendous growth of learning technologies.*

Piskurich, G. M., & Sanders, E. S. (1998). *ASTD models for learning technologies: Roles, competencies, and outputs.* Alexandria, VA.: A.S.T.D.

Schaaf, D. (1997). Technologically speaking. *Training, 34,* SA 5-SA 12.

Schwartz, K. D. (1996). Fast becoming interactive, training isn't what it used to be. *Enterprise Reengineering*. [Online] Available: URL: http://www.reengineering.com/articles/jul96/spotlight/htm

Sherman, S. (1993, February 19). The new computer revolution. *Fortune*, 56-80.

Van Buren, M. E. (1998). Mainstreaming learning technologies. *Technical Training, 9 (1)*, 24-28.

Woollard, R., & Morrison, S. (1995). *Just-in-time learning. Orlando Multimedia 1995.* Warrenton, VA: Society for Applied Learning Technology.

Biographical Sketch

Dr. Bowen is a full-time professional educator and a part-time independent consultant. She is a recent doctoral graduate of the University of Toledo, with a major in Educational Technology and a minor in Business Management. She specializes in performance consulting, curriculum design, and web site development. Dr. Bowen has over twenty years experience in education and training. With her enthusiasm, creativity, and dedication, she has helped many organizations enjoy tangible results.

Address: 742 Deerwood Drive
Defiance, Ohio
E-mail: theesajb@bright.net
URL: http://www.bright.net/~theesajb/
Phone: (419) 769-4706
Fax: (419) 782-4354

Synchronous, Internet Based Training Using BrightLight™ by USAF Chaplain Service

Chaplain, Major Jimmy M. Browning
Staff Chaplain Internet Resourcing
USAF Chaplain Service Institute, USAF Chaplain Service

Technical Sergeant Daniel Henderson
NCOIC, Education and Training
USAF Chaplain Service Institute, USAF Chaplain Service

USAF Chaplain Service Interest in a Synchronous, Interactive DL Environment

The USAF Chaplain Service Institute (CSI), located at Maxwell AFB, Alabama provides education, training, and resources which promote professional excellence for all Air Force chaplains and enlisted chaplain service support personnel. CSI conducts both formal in-residence and distance learning courses.

Our Interest in Distance Learning

The Chaplain Service Institute takes an active role in delivering learning opportunities through both synchronous and asynchronous distance learning methods. For asynchronous delivery, CSI developed a web site (http://www.usafhc.af.mil) to provide information globally. For synchronous delivery, CSI has a strong history of providing quality instruction through interactive television seminars or what we call "Professional Distance Learning" (PDLs). These interactive television seminars are one-way video and two-way audio broadcasts using satellite support. In 1998, CSI provided ten separate PDLs reaching 991 students across 317 registered bases. In 1999, we conducted eight PDLs impacting 877 students over 283 registered bases.

Our Newest Initiative

CSI's newest effort with our synchronous distance learning initiative is with a product called BrightLight. We wanted to know if we could efficiently and effectively teach through the Internet. How would the instructors and students receive it? Would the students learn as well through this medium as they do in a traditional in-residence classroom? What technical barriers and problems would we have? Would BrightLight™ be a tool for the USAF Chaplain Service?

Another Tool in Our Distance Learning Efforts—BrightLight™

BrightLight is a software product of Avalon Information Technologies Inc. of Ontario, Canada. (http://www.atlantis.com/avalon/). BrightLight is an instructor-led distance learning system with integrated performance support and information management features that runs on current multi-media equipped computers. The instructor station and up to 50 student stations are connected together over standard telephone lines, the Internet, an intranet, a LAN, a WAN, or other available telecommunication channels such as ISDN or T1 lines.

Classroom Emulation

BrightLight emulates the classroom environment. The instructor can present multimedia information simultaneously on all student screens. With the availability of several presentation tools, the instructor can annotate this content with colored pens and symbols, use pointers to highlight important information, use a whiteboard, and send text. The instructor also controls who can talk over the microphone to others. Students, in turn, can respond to the instructor through several buttons.

Avoiding Bandwidth Restrictions

BrightLight avoids the high-bandwidth requirements for multimedia information by enabling the raw multimedia content to be stored in advance on CD-ROMs, zip drives, or downloaded from the Internet prior to class, at each student station. The instructor can send any last minute changes to the students during their classroom log-in procedures. This "hybrid" approach breaks the bandwidth bottleneck that is currently stifling multimedia use on the Internet.

Recording Features

Through BrightLight, students can record the entire presentation including all audio and play it all back later. This session recorder also captures all annotations, notes, and questions. This feature allows the student to focus on understanding and synthesizing and not note taking. Using compression technology, an entire one-hour session can be saved in only 1.5 Meg of hard disk space. BrightLight also provides a Knowledge Database feature that allows the students to save new material from courses and external sources in a data base and then gain access to it just at the time they need it on the job (Simmons, 1997).

Our Testing and Evaluation of BrightLight

A Proof of Concept

CSI used our computer classroom lab and other base locations to test this concept for Internet-based, synchronous instruction. Our goal was to work out the technical, logistical, and instructional "bugs" in this controlled environment before deploying to the rest of the USAF Chaplain Service.

Classroom and Server Configuration

The Chaplain Service Institute has approximately 1,000 students for our various in-residence training courses yearly. Our classroom consists of thirty-one Pentium based multi-media computers running Windows NT 4.0. Our web and BrightLight server is a Compaq 6000 with

Microsoft's NT 4.0 and IIS 4.0. We also installed the BrightLight server on a DELL server running NT 4.0. BrightLight does not require IIS or Internet server software. BrightLight provides that needed software when one installs the entire BrightLight software package on the server and starts *blserver.exe*. This provides the instructor's and students' connection through a server's Internet protocol address. Alternately, the instructor's computer can also function as BrightLight's server. In our test, this configuration used too many resources on the instructor's computer. BrightLight server software makes it extremely easy to set up and use. A disadvantage, however, is that the server software must be opened as an application, thus requiring a system administrator to log into the BrightLight server.

Building Presentation Slides for BrightLight

Initially, our biggest challenge was finding an efficient way to build presentation slides for BrightLight. One can build slides within BrightLight but the process is very labor intensive and not likely tolerated by our average instructor! Additionally, since all of our instructors were already using Microsoft's PowerPoint™ for their slides, we desired to convert PowerPoint slides to BrightLight.

The conversion from PowerPoint slides to BrightLight was problematic. First, we had to convert the slides to wmf (windows metafile). Then, we imported them, *one at a time*, as a background image to create our BrightLight slide show. After conversing with Mr. Dale Simmons at Avalon Information Technologies Inc., their engineers promptly sent us an update that enabled us to import *multiple* wmf files at once. This made the process of conversion much easier. The process of converting PowerPoint slides now consists of the following: save a PowerPoint presentation to wmf files, import wmf files all at once into Brightlight, and rename the slides from slide1, slide2, etc., to something more descriptive. This change was a huge improvement and kept us interested in the product.

A remaining drawback, however, still exists with converting PowerPoint slides into BrightLight. To have builds (adding several bullet statements one at a time during a presentation) within a slide, one can either develop all the slides using BrightLight's slide design interface (not me!) or one can have only one build per wmf slide. Thus, if your PowerPoint slide has four builds on it, you will have to create three additional copies of that slide, and add a single new build on each additional slide. Then, after converting the slides to wmf, your presentation will now have the same look as your previous building PowerPoint slides.

Students and Instructors Responses

Computer attitudes. We gave our enlisted students a survey of attitudes toward learning about and working with computers at the beginning and near the end of their classroom training. We gave the survey developed by Brenda H. Loyd and Clarice P. Gressard of the University of Virginia. We did not do a statistical analysis to see if a positive correlation existed between computer anxiety and resistance to BrightLight. One chaplain verbally responded that he was computer illiterate and was uncomfortable with the BrightLight experiment, especially over testable material. Yet, we found that most students, even with minimal computer background, found the BrightLight experience positive. We suspect a positive relationship exists between a student's ease of using a computer and immediate acceptance of this medium for instruction.

A medium for effective learning. Our instructors used the same content and slides for our proof of concept test as they did in their traditional classroom instruction. Early indicators, barring system failures like LAN and Internet problems, indicated BrightLight does work. Students did as well on block test questions through BrightLight as they did in a traditional classroom setting. Previous "traditional" classes had a 95.7% and a 84.6% successful completion of test question. Our BrightLight class had 100% success rate over the same block. Obviously, the extra emphasis we placed on this block of material could account for the positive results. We were, however, pleased that we did not see an overall reduction in test scores.

Successes. We note several:

- Minimal learning curve for instructors and students to use BrightLight. We took two instructors with no previous exposure with BrightLight; they taught through BrightLight with as little as ten minutes of training. Students can get around also with minimal orientation but we found that 30 minutes is about right for students.
- Can now easily convert and rename PowerPoint slides into BrightLight.
- Can mimic CBT but with flexibility of making last minute changes.
- Easy classroom content delivery. One could send content to students in advance in a CD-ROM or in a Iomega Zip Disk. We choose a different option. We compressed the files and loaded it on our server. Then, our students downloaded and decompressed the class content a day or two before class. This maximized our flexibility.
- BrightLight offers instructor control of classroom.
- Easy to prepare and deliver test questions within BrightLight.

Failures. Unfortunately, some do exist:

- BrightLight, like most other distance learning mediums, does impact class interaction. We suffered some loss of personal interaction with the instructor. We also noticed that when the class become frustrated with system issues (having problems with hardware or software), they became less interactive with the instructor.
- Lan or Internet problems do impact content delivery. For one test, we were having some Lan problems non-related to BrightLight. These problems caused audio latency as much as 10 seconds. This was especially noticeable in the computer classroom. Two students side by side either heard the instructor as much as 2 or 3 seconds apart or one's audio cut in and out.
- Many network system variables are uncontrollable by the instructor which will impact the level and quality of teaching/instruction.

USAF Security Issues

Given hackers desire to infiltrate *.gov* and *.mil* domain web sites, security is now much tighter with military network systems. We hit our first major wall when we first moved BrightLight outside of our local classroom. We tried a connection test with a single student in Korea. This student could not log into our classroom test early one morning. We determined proxy servers and firewalls blocked access. With the help of the Air Force Network Operations Center, we determined exactly what BrightLight was doing. Then, with a review of the pertinent regulations, they assisted us in communicating those network modifications needed for us to continue testing BrightLight. Without their help, our testing of BrightLight would have abruptly ended due to these security issues.

Our Vision of Using a Product Like BrightLight

While we are several months away from implementing this medium, we do have some ideas on how the USAF Chaplain Service can use BrightLight.

Small Nuggets Please

In our trial efforts, neither students nor instructors wanted to use any product like BrightLight for a continuous, extended period of time. As a result, we believe the best implementation would be like a college level course. The instructional period should last about one hour two or three times a week. This would allow the students to get small nuggets of information rather than one large dump. It appears that students fatigue much quicker through this type of medium than in a traditional classroom. One student wrote, "I am wondering if a BrightLight presentation will have enough stimulus in it to keep a tired student from falling asleep. A live instructor can scream or yell to maintain attention." While I would question any instructor who has to yell to maintain interest, it does point to a distance learning issue. How do you effectively engage students that you can only hear but not see?

Enhance In-Residence Courses, Not Replace

We believe that our distance learning opportunities should enhance in-residence learning and not replace it. Thus our long-term distance learning objectives is to augment our in-residence efforts. For example, we could conduct a Professional Continuing Education (PCE) class on religious accommodation. This 32-hour effort would be an intensive, focused effort for each student to reach at least a comprehension level of understanding on religious accommodation issues. These 30 students (the size of our in-residence classroom) would then return to their perspective bases. From our web site, each base could download the religious accommodation lesson plan and study any preliminary information. Then, at a later date, the same presenter of the PCE would conduct either a 3-hour interactive television seminar or three 1-hour classes using a product like BrightLight. The students who attended the in-residence PCE course on religious accommodation would now be student facilitators for participating bases.

Additionally, CSI could use both asynchronous and synchronous delivery methods to prepare students to have a more meaningful experience in our in-residence courses. For instance, a student could receive some required readings from the web site. An instructor, using a product like BrightLight could then present several knowledge-level lectures *BEFORE* students arrive at CSI. This would allow for some interaction with the instructor and other students before arriving for the in-residence formal courses. Thus, the student could spend less time in the formal courses for knowledge-level instruction and more time for comprehension-level learning opportunities.

Desired Changes in BrightLight

We hope for the following changes within BrightLight:

- Ability to run native presentation programs like PowerPoint within BrightLight.
- Application sharing should open within the BrightLight display area, which will allow BrightLight annotation controls to function.
- BrightLight needs to be able to maximize screen real estate. Currently, BrightLight is designed around an 800 by 600 pixel window. If users are set to a higher resolution, they will see a BrightLight window that cannot be enlarged to their full monitor size.
- BrightLight must work with a proxy server without any network system reconfiguration.
- Batch processing of student administrative functions would provide greater ease of course registration. For example, enrolling students or adding student accounts require several mouse clicks for each student. We desire the ability to highlight the entire list of students, make any enrollment changes, and have it to apply to all students. Currently, we must perform the enrollment changes for each student. (To be fair to the product, we have not yet tested the web enroll feature of BrightLight.)

References

BrightLight [Computer Software]. (Version 2, 1998). Avalon Information Technologies Inc. Brampton, Ontario, Canada.

Loyd, B. H., & Gressard, C. P. *Survey of attitudes toward learning about and working with computers.* University of Virginia. Used by Permission. Survey hosted at http://www.usafhc.af.mil/html2/computerattitude.htm

Simmons, D. (1997, March). *Just-in-time knowledge.* Presented at the Leading Edge Training Technologies Conference, University of Victoria, British Columbia.

Biographical Sketches

Chaplain, Major, Jimmy M. Browning is Staff Chaplain, Internet Resourcing for the USAF Chaplain Service Institute, Ira C. Eaker College for Professional Development, Air University, Maxwell AFB, Alabama. In this capacity, he develops and coordinates Internet Based Training for the USAF Chaplain Service. Additionally, as webmaster he develops, designs and manages the Office of the Chief of the Chaplain Service's web site. He represents USAF HC on the Air Force Distance Learning Users Group. Ch Browning holds four degrees including a Doctor of Ministry from Southwestern Baptist Theological Seminary and a Masters of Communication from Boston University.

Address: USAF Chaplain Service Institute (CPD/HC)
155 N. Twining St
Maxwell AFB, AL 36112-6429
E-mail: jimmy.browning@maxwell.af.mil
URL: http://www.usafhc.af.mil
Phone: (334) 953-3777
Fax: (334) 953-7877

Technical Sergeant Dan Henderson is the NCOIC, Education and Training for the USAF Chaplain Service Institute, Ira C. Eaker College for Professional Development, Air University, Maxwell AFB, Alabama. In this capacity he is responsible to the director for Chaplain Service Support Personnel training. He also serves as a primary instructor in all enlisted courses. He is responsible for research, development, and management of all Professional Distance Learning courses. TSgt Henderson holds a MBA from Webster University and is currently working toward a Ph.D. in public administration and public policy from Auburn University.

Address: USAF Chaplain Service Institute (CPD/HC)
155 N. Twining St
Maxwell AFB, AL 36112-6429
E-mail: daniel.henderson@maxwell.af.mil
URL: http://www.usafhc.af.mil
Phone: (334) 953-3777
Fax: (334) 953-7877

Designing a Web-Based Program in Clinical Bioethics: Strategies and Procedures

Elizabeth Buchanan, Assistant Professor
University of Wisconsin-Milwaukee

Nancy Morris, Information Systems Specialist
Medical College of Wisconsin

Introduction

Distance education in the form of web-based coursework is quickly becoming a core educational strategy at the tertiary as well as secondary institutional levels. During the 1995-96 academic year alone, 750,000 of the 14.3 million college and university students in the US enrolled in distance ed classes (Gibson, vii). Green (1997) "reports that the University of Phoenix, which relies heavily on distance education of all forms, has become the second largest private university in the US enrolling more than 31,000 students" (Barely, p. 7). A recent *Chronicle of Higher Education* describes the state of distance education clearly: "For an industry that barely existed three years ago, the level of activity is dizzying" (A27). The number of students enrolling in web-based coursework or programs continues to increase, and hopefully, as these numbers increase, the pedagogical techniques surrounding de delivery improve as well. A significant issue for faculty and instructional designers of de, however, depends in the extent to which we understand learning environments that facilitate authentic learning and enhance access to and success in higher education (Gibson, viii).

To this end, the first online program in Clinical Bioethics at the Medical College of Wisconsin was designed and implemented to foster a unique pedagogical experience. The program was conceived in 1997 by Dr. Mark Kuczewski, the Director of Graduate Studies in the Center for the Study of Bioethics. The program is funded with a grant from Ameritech, and included the position of an instructional designer to work with the content experts in designing the courses. Elizabeth is the designer, and works in concert with Nancy, in the Office of Research, Technology and Informatics. The first course ran through the Spring of 1999, and had an initial enrollment of 30 students. Of import in de studies, no students dropped out, as attrition rates generally exceed traditional on site coursework attrition rates.

Course Construction

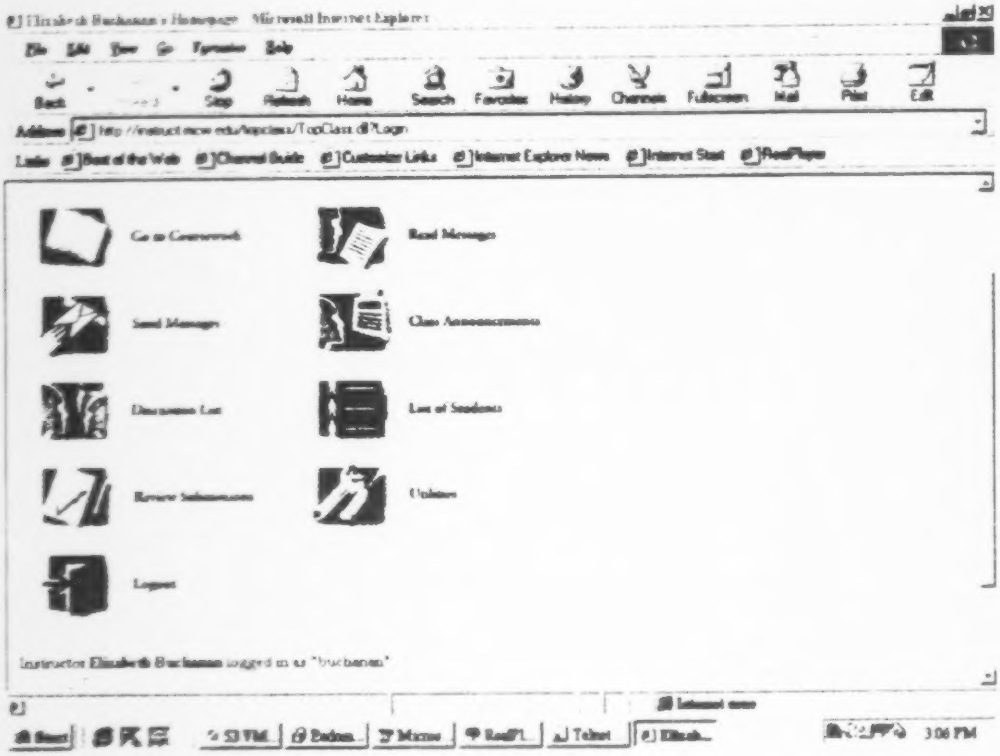
The program's four courses are built in WBT Systems Top Class software and run through the Instructional Programs web server [http://instruct.mcw.edu] at the Medical College of Wisconsin. As Moore (1998) pointed out:

> A distance education program should offer its students a course with clear, comprehensive, and exclusive statements of learning outcomes, its content trimmed to fit the student's time budget or shaped into hourly, daily, weekly, or monthly modules and units of study. A well-integrated distance education program should have

> strategically placed, well-integrated testing and feedback mechanisms, with efficient individual learner-to-teacher communication channels and a mechanism for giving a student advice on learning-related personal difficulties. The weighing, vetting, and editing of every word printed, recorded, or filmed and monitoring teacher-learner exchanges is essential. (p.5)

The components of each course include:

- Top Class module
- Web Crossing Discussion Forum (both synchronous and asynchronous components)
- Email reflector


Back
Stop
Refresh
Home
Search
Favorites
History
Channels
Fullscreen
Mail
Print
Edit
Address
Links
Best of the Web
Channel Guide
Customize Links
Internet Explorer News
Internet Start
RealPlayer
Go to Coursework
Read Messages
Send Messages
Class Announcements
Discussion List
List of Students
Review Submissions
Updates
Logout
Start
3:06 PM

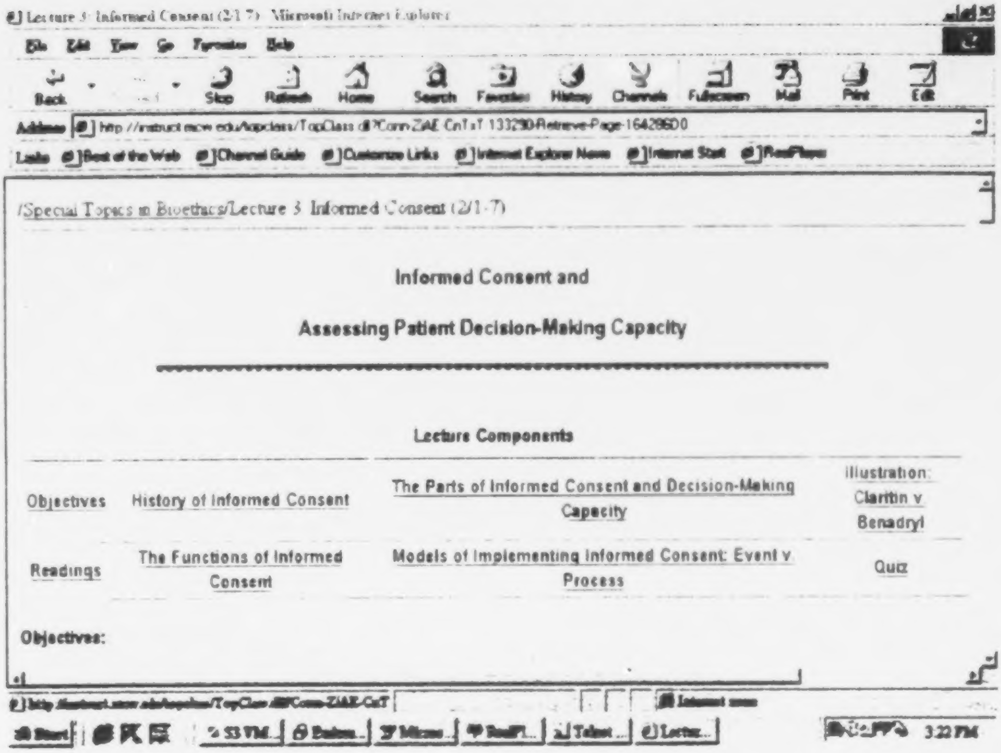
http://instruct.mcw.edu/topclass/TopClass.dll?Login

Instructor Elizabeth Buchanan logged on as "buchanan"

Figure 1. Top Class Main Module

From the main page, students choose the lecture. To ensure the integrity of each lesson, and in keeping with Moore's ideas above, the structure of each lesson is consistent:

BEST COPY AVAILABLE


Lecture 3: Informed Consent (2/1-7) - Microsoft Internet Explorer
File Edit View Go Favorites Help
Back
Stop
Refresh
Home
Search
Favorites
History
Channels
Fullscreen
Mail
Print
Edit
Address
Links
Best of the Web
Channel Guide
Customize Links
Internet Explorer News
Internet Start
RealPlayer
Internet zone
Start
3:22 PM

/Special Topics in Bioethics/Lecture 3 Informed Consent (2/1-7)

Informed Consent and

Assessing Patient Decision-Making Capacity

Lecture Components

Objectives	History of Informed Consent	The Parts of Informed Consent and Decision-Making Capacity	Illustration: Claritin v Benadryl
Readings	The Functions of Informed Consent	Models of Implementing Informed Consent: Event v Process	Quiz

Objectives:

Figure 2. Lesson Components

As Figure 2 reveals, a simple HTML table comprises the lecture components, and students can see clearly each facet. Thus, some knowledge of HTML is requisite, yet the HTML Upload feature in Top Class decreases the extent to which the designers need to write the code within Topclass itself. These lectures were created in Composer and uploaded to the College server. It is this appropriate to describe the system and student requirements.

System Requirements

WBTSystems provides TopClass for the following platforms:

- Mac OS 7.1 (or greater)
- Windows NT 4.0 (or greater)
- SPARC Solaris 2.5.1 (or greater)
- Intel ELF Linux 2.5 (or greater)

We have chosen to use Windows NT, and the following system requirements are for a server running this operating system.

1. A Pentium II class computer running at 166MHz with at least 32Mb of RAM to support 2-5 users (128Mb minimum recommended for larger numbers of users).

BEST COPY AVAILABLE

2. Windows NT 4.0 Server or greater (Windows NT Server 4.0 recommended) and either Microsoft Internet Information Server 1.0 (or greater) or Netscape FastTrack 2.0 or Enterprise 2.0 servers or O'Reilly WebSite Pro version 1.1h or later.

We are using a Compaq Proliant 5000, with dual Pentium II processors, 256 MB RAM. Ideally WBTSystems suggests a dedicated server for TopClass alone. We are in the process of migrating TopClass to a Compaq Proliant 3000, with dual Pentium II processors, and 256 MC RAM. We are using Microsoft's Internet Information Server 3.0.

Student Requirements

These requirements take into account each of the four courses in the Bioethics program module. Each course may not require every aspect.

Technical:

- Personal Computer (486 or higher);
- Latest version of Web browser, specifically Internet Explorer 4.02 or higher; or Netscape Communicator 4.0 or higher.
- Windows 95 and Office 97;
- CD-ROM drive
- Sound Card;
- Email accessibility;
- Synchronous chat capabilities;
- Minimum 28.8 K modem connection to the Internet;
- Printer (optional, but recommended)

Computer Literacy:

- Ability to use Internet and WWW, email, listserves, chat (IRC), Adobe Acrobat, and RealPlayer;
- Ability to work with email attachments;
- Know how to contact your Internet Service Provider (ISP) for technical assistance on Internet connection and tools. (This is a critical point, so that the instructor is not overwhelmed with tech support questions)

To ease the students into the web course environment, Elizabeth provided detailed instructions to the participants prior to the inception of the course. As many acknowledge in distance education work, planning is critical and the success of a program will depend on the organizational structure surrounding the course, in addition to the course content and instructor expertise.

Course Materials

To facilitate easy and cost-effective access to the course materials, articles and materials were placed on a private electronic reserve system, as MCW does not formally support it. Access was contained within the lesson modules by hyperlinking the readings' bibliographic information to the source in the College's server. Thus, only registered students with access to the specific course could access the materials. Adobe Exchange was used to scan the articles, and Adobe Acrobat to read. In addition, the course instructor made Amazon.com a site where texts can be purchased. To list in Amazon's catalog is straightforward and details are available on their web site. All of these details were worked out prior to the first "day" of the class.

Course Interaction

The amount of dialogue throughout the course surpassed everyone's expectations. The clumsiness of Web Crossing lead to a greater reliance on the mail reflector, yet interaction was key in the course. As Elizabeth's dissertation research reveals, the forums--both the asynchronous and synchronous--provided a place for expression where some of the participants felt otherwise inclined to remain silent. This empowering characteristic of web based dialogue deserves pedagogical recognition, while in the practical vein, in designing a web course, implement as much interaction and dialogue as possible.

The instructor provided nearly daily responses, and if he or Elizabeth were off-line for more than a few hours, the class was notified.

Evaluation

Electronic forms were used for the course evaluation. Students completed the forms and submitted them to the program coordinator. The course received high marks for its thoroughness, ease of accessibility, organization, and holistic approach.

References

Barley, S. R. (1999). Competence without credentials: The promise and potential problems of computer-based distance education. In US Department of Education, *Competence Without Credentials* (pp. 5-12). Jessup, MD: US Department of Education.

Blumenstyk, G. (1999, April 9). The market intensifies in distance learning. *Chronicle of Higher Education*, A27-A30.

Campbell Gibson, C. (1998). *Distance learners in higher education*. Madison, WI: Atwood.

Moore, M.. 1998. Introduction. In C. Campbell Gibson (Ed.), *Distance learners in higher education* (1-7). Madison: Atwood.

Biographical Sketches

Elizabeth Buchanan, Ph.D. is joining the faculty of the School of Library and Information Science at the University of Wisconsin-Milwaukee in August 1999. She has recently completed her dissertation entitled, "Dialogue, Empowerment, and Distance Education," a qualitative study based on the MCW program. She has worked in the SLIS as Distance Education Coordinator, and teaches classes on instructional design, educational technologies, research methods, and gender and ethical issues in Library and Information Science.

Address: School of Library and Information Science
UW-Milwaukee
PO Box 413
Milwaukee, WI 53201
E-mail: buchanan@slis.uwm.edu
Phone: (414) 229-4707
Fax: (414) 229-4848

Nancy Morris is Information Systems Specialist in the Office of Research, Technology and Informatics at the Medical College of Wisconsin. She earned her MLIS from University of Wisconsin-Milwaukee, where she will begin her doctoral studies this fall. Prior to her position in ORTI, Nancy worked as Library Systems Assistant in the Todd Wehr Library at the Medical College of Wisconsin.

Address: Office of Research Technology & Informatics
Medical College of Wisconsin
8701 Watertown Plank Rd
Milwaukee, WI 53226
E-mail: Nmorris@mcw.edu
Phone: (414) 456-4382
Fax: (414) 456-6623

Interactive Satellite Training: More Than Just a Talking Head

Melissa Buscho, CFP
Manager, Advisor Learning Network Programming
American Express Financial Advisors

Beth Knutson, CFP
Director, Electronic Media Group
American Express Financial Advisors

American Express Financial Advisors

American Express Financial Advisors provides financial planning advice and services to more than two million clients through a nationwide field organization of over 9,000 financial advisors. These advisors receive extensive training on a wide variety of topics including financial planning concepts, investment strategies and products, communication and selling skills, marketing, technology and practice management. Training is delivered through a variety of strategies including classroom, self-study, one-on-one coaching, online and interactive satellite.

Advisor Learning Network (AEFA's Interactive Satellite Television Network)

The Advisor Learning Network (ALN) consists of two broadcast studios in the Minneapolis area and 300+ remote sites. We currently broadcast 25 to 30 hours of training each month, and plan to double that number within the next year. Each of the 300+ sites has a satellite receive system, VCR, TV along with interactive distance learning (IDL) technology. The IDL equipment consists of 5 keypads per site that are connected to a computer. The field-based computers transmit viewer responses to a computer in Minneapolis that tabulates results in real time for the trainers in the studio. Each keypad has a built-in microphone that allows the student to ask a question of the trainer in Minneapolis by simply pressing a button on the keypad.

Basics of Interactive Satellite Training

- Trainers are on a studio set that includes a computer interface.
- Participants can see and hear trainers, but can't see participants in other sites.
- Trainers can hear but not see participants.
- Participants interact with trainers and each other via the keypad. For example, they can answer true/false, multiple choice and/or numeric questions and they can ask a question or offer a comment from their remote site by pressing the "call" button on their keypad. Participants use their employee number to log in, which allows the system to display their name when they call in with a question or comment.

Keys to the Success of Interactive Satellite Training

Effective management of four elements is essential to successful interactive satellite training:

- Design and development of course(s) or curricula
- Logistics
- Promotion/communications
- Delivery

Following are our key learnings in these four areas.

Design & Development of Courses/Curriculum

Get to the meat quickly. If you don't engage the audience right away (i.e. provide value) you will lose them. Limit time spent on session setup, pre-assessment, reviewing objectives, and orientation to the medium.

Use a variety of media. Our culture (via MTV and video games) has taught people to process information very quickly. Instructional programming over interactive satellite must incorporate variety and frequent transitions in order to keep participants interested. A "talking head" causes them to leave. Bring in field experts through videoconferencing or the phone, utilize tape roll-ins, document-camera shots, graphics and computer screen demos. All of these help to add interest and keep the audience engaged.

Utilize field experts. Our advisors want to be trained by their peers who have had practical success, rather than by theoretical experts. We have leveraged a mix of technical and practical experts so that participants can get information on the "what and why" and on the "how."

Use interactivity when it adds value, not for its own sake. Keypad questions provide interactivity, which engages the participants in the learning process. However, if the questions do not provide value by offering new information, clarifying a trouble spot, or applying an idea to a real life example, the participants may get frustrated.

Case exercises can work well. Give participants 3-4 minutes to complete an exercise and ask them to call in with their findings.

We stimulate participation by offering small prizes (golf balls, mugs, tee shirts, and pens) to those who interact. We also award prizes to those who contribute a particularly valuable application or a correct answer on an activity.

Less is more. Divide content into short modules (1½ hours or less). One benefit of this medium is that we can cost-effectively get back in front of our audience again and again to continue the learning and/or reinforce what was learned in an earlier session.

Structuring the time and content within each module is also important. With an hour of airtime, our guideline is to present no more than 45 minutes of content. The other 15 minutes are spent on setup, interactivity, Q/A, and post session evaluation questions.

Choose topics carefully. Some topics are better suited to this medium than others. We have found that it is difficult to use interactive satellite for training on technology. A large budget and infrastructure are required to adequately train technology over this medium. Computers are needed for hands-on activities, and an on-site technical expert should be present at each location to assist participants when they get lost or experience computer problems.

Topics that are better suited to this medium include investment strategies, workflow efficiencies and marketing techniques.

Because we cannot control attendance, trainees must believe the content is valuable or they will not attend. For example, our advisors dislike use of this medium for "selling" them on a new product or service. Instead, they want it used to teach them how to use the new product/service to improve their productivity, or to work more efficiently. The trick is to put the marketing into promoting the session and tell them we will teach them the "how" during the training session.

Leverage someone with expertise in this medium for design and development. Working with those who have been educated and have experience in designing for this medium has been very helpful. These experts know how to effectively add value with interactivity media variety. But don't underestimate the time it can take for the experts in this medium to understand how your organization works. They need to know this to appropriately apply their skills and knowledge to make the program work for your audience.

Gain commitment from business partners. Just as there is a learning curve for the experts in this medium to understand our business, there is a learning curve for the business partners to understand and accept the interactive satellite training medium, especially in relation to selection of trainers, timeline for course development and funding.

Promotion/Communications

Provide information on dates and times well in advance. Inform leaders first and enlist their support in communicating the importance of the training to the rest of the organization. We give prospective participants at least 5 weeks advance notice. Otherwise their calendars will have already been booked. Know your audience and what they need for advance notice.

Communicate directly to your audience. Don't rely on leaders to adequately or accurately communicate the content and purpose of your training. They can reinforce messages, but should not be responsible for providing detailed information. If you don't communicate directly to audience members, they may show up expecting something totally different from the actual program.

Use multiple channels to promote and communicate about your training. Develop a plan and consistently use those channels for every event. That way your audience will know where to look. We use the company intranet, direct mail to the target group(s), e-mail, fax-on-demand, regular field publications, and commercials within other programs.

Facilitate scheduling of training rooms. Personnel in charge of local training rooms should be informed of upcoming programs well in advance so the local rooms can be booked for the training. Give them a process to use for managing conflicts in training room calendars.

Clearly define each session. Participants need to know what they will get out of the training in order to decide whether or not to attend. Specify the target audience, training objectives, where similar training may have been presented previously via a different medium and whether or not the training will have value to non-targeted people (e.g. Continuing Education credits).

Logistics

Identify and communicate standard time slots. Even though we have 24 hours of satellite time available, the field locations are often booked with other events. Therefore we committed to and communicated standard times for airing training via this medium. We identified the lowest usage times for these rooms and developed a schedule that would work for the majority, recognizing east and west coast time zone issues. Our "training window" is Tuesday, Wednesday and Thursday afternoons from noon to 5:00 p.m. (CST).

Require advance registration. Registration assists in effectively managing materials duplication and distribution. We leverage a toll-free telephone registration system that enables participants to register for a course, withdraw from a course, and leave messages asking for follow-up. We provide a cutoff date for registration (usually 2 weeks prior to the broadcast) and use the number registered by that date as the basis for materials duplication.

Registration can also be used to determine the cost benefit of airing a session. For example, if you need at least 100 people attending a course to make it worth your time and money, and you don't have that amount by the cutoff, you can cancel without incurring any satellite costs.

Consider charging tuition. One way to cover the cost of implementation is to charge the participants to attend. Calculate the cost to produce the course, and decide upon the appropriate amount to charge each participant. You can then determine the number of participants you need to meet your cost/benefit requirements.

Our organization is made up of independent contractors who are required to pay for professional development and continuing education. Therefore, we charge participants for some of the courses we offer. One difficulty with this, however, is that we can only charge those who register, those who log on to keypads, and those who request CE credits. We will not know how many (or who) participated without registering or logging on. This should be a small percentage though, especially if the ethics and code of conduct involved in participating are clearly communicated.

Facilitate room set-up. Designate a site coordinator at each location to "own" the set up, maintenance, testing, troubleshooting and wrap up activities associated with each training session. We do not have the ability to screen calls coming into the program, so we use a variety of approaches to minimize inappropriate calls (i.e., "We didn't get participant guides." or "The sound is off."). We hold test time prior to each broadcast and have site coordinators check out equipment. We also have a toll-free help line to provide assistance with equipment problems.

Manage participant materials. We always provide participant materials containing key information and blank space for note taking. We have not had success in e-mailing materials to the participants or the site coordinators and having them print and copy the materials. Therefore we have maintained control of this process. We produce, duplicate, and distribute the materials to the site coordinators and have them set out materials just prior to a session airing.

Delivery

Choose trainers carefully. Training over this medium requires a change of mindset for trainers who like and/or excel at face-to-face training. Those who enjoy traveling, wining and dining and schmoozing with trainees will not get the same strokes and direct gratification from this medium.

We have found it particularly valuable to have both a subject matter expert (SME) and a facilitator on air. The SME's role is to present content and answer participant's questions. The facilitator should be skilled in managing interactions with participants and in operating the computer equipment. The facilitator's role is to move the session along, promote interactivity, and manage the technical aspects of the program. A facilitator who is knowledgeable in the topic can also build upon the SME's presentation and provide additional value to the participants.

Trainers need to sustain a high level of energy from start to finish and project the energy through their voice, face and upper body. They must be able to pull off the interactivity in a fun and energetic way that is natural and comfortable for them.

Trainers must be able to make eye contact via the technology. They have to be very comfortable looking into a camera, because that is how they make eye contact with the participants. Without this eye contact, participants will feel disconnected

Manage questions carefully. Present all of a major section of content before entertaining questions. At the end of a major section, take 1 or 2 questions and move on. Leave time at the end of the session for Q/A so that those who want to leave can do so. This is especially important when participants are paying for a course. They don't want to walk away thinking they didn't get all the content because the facilitator took too much time answering questions.

Provide a support person/place/method for follow up questions. Participants need to know where they can go to get additional help and clarification.

Use technology for your eyes. Because trainers cannot use body language cues to gauge how participants are doing, they need to get that information from the tools they have. For example, trainers often stop after a major section and ask a keypad question about pacing or level of detail. Based on participant responses, the trainer can alter the pace or level of detail being provided.

Summary

Four key elements: production, promotion, logistics planning and delivery contribute to the overall success of interactive satellite training. No matter how well-designed a course is, and no matter how well the trainers deliver it, if the people out in the sites don't know the course is being offered, or if a training room is being used for another meeting at the same time the session airs, the benefits are lost.

Managing all four of these elements effectively will help you to get the most from the interactive satellite training medium.

Biographical Sketches

Melissa J. Buscho, CFP, a Certified Financial Planner for eight years, brought her field experience to the corporate office to influence how field personnel are trained. She has nine years of corporate training experience in design, development, and delivery. Her work has covered a wide variety of topic areas. Melissa has spent the last two years building the interactive satellite training program for AEFA.

Address: American Express Financial Advisors
IDS Tower 10
T5/966
Minneapolis, MN 55440
E-mail: melissa.buscho@aexp.com
Phone: (612) 671-4677
Fax: (612) 671-7841

Beth Knutson, CFP, has a B.A. in Biology/Education from St. Olaf College and an M.A. in Education from the University of Minnesota. She has over fifteen years of corporate training experience in instructional design, curriculum development, and program implementation. Her work has covered a wide variety of topic areas, including financial planning, computer applications, selling skills, investment strategies, and products, marketing and emotional competence.

Address: American Express Financial advisors
6176 Olson Memorial Highway
Golden Valley, MN 55422
E-mail: beth.knutson@aexp.com
Phone: (612) 797-5105
Fax: (612) 541-0887

Association for College and Research Libraries (ACRL) Guidelines for Distance Learning Library Services

Debbie Cardinal, Program Manager
Wisconsin InterLibrary Services

Why Do We Need the ACRL *Guidelines for Distance Learning Library Services*?

Provider and Victim Libraries

A Typical Scene. Robert Dugan, in a 1997 article, "Distance Education: Provider and Victim Libraries," describes a scenario that happens so frequently many librarians think to this day that he was talking about their library! In the article, Paradise College, the victim, has an altercation with a local business owner who is taking a course from Xanadu University, the provider. The business person wants to use the electronic databases available in his home community college but the computer won't let him log on.

I think Xanadu University is only doing what many real universities have done, expanding marketing efforts to a distant audience without increasing the library's operating budget. Xanadu University Library doesn't have the funds to provide electronic database access to distant students or the funds to compensate Paradise College Library for expanding their database licenses to include more and "non-Paradise" students. What's bizarre is that in a world of proliferating "distance education" institutions it's possible to be a provider to one institution, a victim of another, and "victimize" yet another.

Paradise College and Xanadu University are struggling on one hand with reduced or static library budgets, rising journal costs, complex and restrictive electronic database licenses and security-conscious computing systems. On the other hand, the Institution is offering courses to a broader, older and busier student group who may not often be on campus. Xanadu University's outreach is doomed to fail because of inadequate student support, with frustrated students who won't take another course. Community awareness of and need for library information services can also complicate the library's service agreement.

Specific Provisions of the ACRL *Guidelines for Distance Learning Library Services*

The role of the *Guidelines*. The *ACRL Guidelines* outline the institution's responsibilities for supporting distant learners. They also provide a benchmark for measuring the quality of that support. This ensures that institutions that try to meet accrediting and licensing procedures will succeed. The *ACRL Guidelines* have existed since 1981. The 1998 version is the second revision. The factors that led to this revision are an increase in non-traditional study; an increase in diversity of educational opportunities; an increased recognition of the need for library resources and services at locations other than the main campus; and an increased concern and demand for equitable services for all students.

Ten descriptive areas. Rather than discuss all ten areas, I've selected a few provisions from some of the areas to illustrate particular points.

Philosophy. The Philosophy section of the ACRL Guidelines describes assumptions about library services that librarians hold. One of these assumes the attainment of superior academic skills in post-secondary education is important to the institution which means members of the distant learning community are entitled to library services and resources equivalent to those provided in traditional campus settings.

In the scenario above, Xanadu University is not extending the same services to their off-campus students as they do their on-campus students. Is it because the faculty and administrators don't care about the off-campus students or is it because they are simply unaware of the restrictions of the libraries in the scene and the needs of the learner?

Another assumption is that the originating institution recognizes the need for service, management and technical linkages between the library and other complementary resource bases such as computing facilities, instructional media and telecommunication centers. In the scene above, if Xanadu U had the proper support from the computing facilities and from the originating institution, the business person could access Xanadu's electronic databases from home, from work or even from a computer in Paradise College Library.

Finances. Under Finances, the originating institution should provide continuing financial support for addressing the library needs of the distant learning community. In the example above, there are two provisions particularly applicable. The financing should be allocated on a schedule matching the originating institution's budgeting cycle and, should be accommodated to arrangements involving external agencies, including both unaffiliated and affiliated libraries, but independently supported, libraries.

Facilities. In the Facilities section, the first provision is that the originating institution should provide access to facilities through agreements with a non-affiliated library, and, virtual services, in which a distant learner would have access to technology for electronic connectivity.

Resources. The Resources section is very clear. The originating institution is responsible for providing or securing convenient, direct physical and electronic access to library materials for distance learning programs. These should be equivalent to those provided in traditional settings and in sufficient quality, depth, number, scope, currentness and formats to meet the students' needs in fulfilling course assignments.

Services. Of eleven essential Services institutions should provide the distance learning community, I've selected four that Xanadu did not provide:

- Computer-based bibliographic and informational services
- Reliable, rapid, secure access to institutional and other networks including the Internet

- consultation services
- promotion of library services to the distance learning community, including documented and updated policies, regulations and procedures for systematic development, and management of information resources.

The ACRL *Guidelines* and the NCA *Guidelines for Distance Education*

North Central Association Commission on Institutions of Higher Education (NCACIHE) and Association for College and Research Libraries (ACRL). If you are unfamiliar with the *ACRL Guidelines for Distance Learning Library Services*, you may feel dubious of its authority. But accrediting and licensing agencies mandate the same provisions. For instance, the NCA is the regional accrediting body for Wisconsin. The *NCA Guidelines for Distance Education* use describe the Institution's responsibilities very similarly. They clearly define "expectations" for the *Institution* in the areas of Curriculum and Instruction; Evaluation and Assessment; Student Services; Facilities and Finances; and Library and Learning Resources. Under Library and Learning Resources, the *Institution* ensures that students have access to and can effectively use appropriate library resources; the *Institution* monitors whether students make appropriate use of learning resources; and the *Institution* provides laboratories, facilities, and equipment appropriate to the courses or programs.

The *ACRL Guidelines* expand and specify exactly, to the staffing level of the librarians and the institution administrators, what is included in those three expectations.

Specific Activities You Can Promote at Your Institution

Get the library to the planning table early! *The ACRL Guidelines for Distance Learning Library Services* are very specific in defining, not only the Institution's responsibilities regarding the library, but also the responsibilities of the Library to the Institution and the Learning Community. It's very clear that an engaged and valued partnership among all departments of the institution will better serve the learning community.

If you *not* a librarian:

- Recognize that equivalent library services are important to maintain institutional integrity and provide superior academic skills for all students.
- Proactively plan and promote library involvement with curriculum design.
- Recognize that in growing and expanding institutions, library funding should expand as programs and enrollments grow.
- Promote linkages between the library and complementary resource bases such as computing facilities, instructional media, and student services.
- *You* are responsible for involving the library administration in the detailed analysis of planning, developing, and adding or changing of the distance learning program from the earliest stages onward.

What your librarians can do for you and your institution:

- Assess and articulate the electronic and traditional library resource needs of the distance learning community, the services provided them, including instruction.
- Develop a written statement of immediate and long-range goals and objectives for distance learning, which addresses the needs and outlines the methods by which progress can be measured.
- Involve distance learning community representatives, including administrators, faculty and students, in the formation of objectives and the regular evaluation of their achievement.
- Participate with administrators, library subject specialists and teaching faculty in the curriculum development process and in course planning for distance learning to ensure that appropriate library resources and services are available.

References

ACRL Guidelines for Distance Learning Library Services. (1998, October). *College & Research Libraries News, 59*(9), 689-694.

Dugan, R. E. (1997, July). Distance education: Provider and victim libraries. *The Journal of Academic Librarianship, 23*, 315-318. Retrieved May 24, 1999, from OCLC FirstSearch (WilsonSelect) database on the World Wide Web: http://firstsearch.oclc.org

Kirk, E. E., & Bartelstein, A. M. (1999, April 1). Libraries close in on distance education. *American Libraries, 124*(6), 40-42.

Lebowitz, G. (1997, July). Library services to distant students: An equity issue. *The Journal of Academic Librarianship, 23*, pp. 303-308. Retrieved May 24, 1999, from OCLC FirstSearch (WilsonSelect) database on the World Wide Web: http://firstsearch.oclc.org

McManus, M. G. R. (1998, June). Neither Pandora nor Cassandra: Library services and distance education in the next decade. *College & Research Libraries News, 59*(6), 432-435. Retrieved May 24, 1999 from OCLC FirstSearch (WilsonSelect) database on the World Wide Web: http://firstsearch.oclc.org

North Central Association Commission on Institutions of Higher Education. *Guidelines for Distance Education.* Retrieved November 18, 1998, from the World Wide Web: http://www.ncacihe.org/aice/guidelines/gdistance.cfm

Biographical Sketch

Debbie Cardinal is a Program Manager with Wisconsin InterLibrary Services (WILS), a statewide network for libraries by membership. WILS mission is to promote sharing of library resources through research, coordination and cooperation. Debbie's primary responsibility is to support and train Wisconsin libraries in using OCLC services but she also does research and development of distance learning technologies and services libraries provide to students.

Address: WILS
728 State St., Rm. 464
Madison, WI 53706
E-mail: cardinal@wils.wisc.edu
URL: http://www.wils.wisc.edu
Phone: (608) 263-5051
Fax: (608) 262-6067

An Assessment of Distance Learning Evaluations

Matthew V. Champagne, Research Director
IOTA Solutions

Robert A. Wisher, Senior Research Psychologist
U.S. Army Research Institute

Jennifer L. Pawluk, Research Fellow
Rensselaer Polytechnic Institute

Christina K. Curnow, Research Fellow
George Washington University

Introduction

The published literature on the effectiveness of distance learning (DL) is overwhelmingly anecdotal. Evaluations are usually informal and conducted by users rather than third-party independent sources. As a result, large-scale evaluations have tended to focus on issues such as usability, equipment quality, and learner preferences, rather than learning outcomes. The majority of studies are not supported by an adequate experimental design and do not offer objective measurement of variables. Empirical evaluation of DL is also not commonly found in DL conferences. For example, a review of the approximately 200 papers published in the 1996-1998 Proceedings of the Annual Conference on Distance Teaching and Learning held in Madison, Wisconsin found only 8% concerned empirical studies of DL. This paper examines these issues and presents a critical review of empirical studies designed to compare training by DL technologies to training by traditional classroom instruction.

This review is based on representative methodologies and findings that exist in the DL literature in academia, industry, and the military. The focus is on training programs rather than educational programs. Training differs from education in that it is linked to organizational objectives and focuses on correcting deficiencies in the workforce, which was the interest of our sponsors. The large majority (80% by our estimate) of literature on the effectiveness of DL is oriented toward education rather than training. We reviewed a total of 33 training studies that reported learning outcome data. In this paper, we (a) investigate the completeness of reporting in terms of identifying course design, special instructional techniques, and methods of electronic communication; (b) characterize the interpretability of the research designs used in these studies; and (c) offer suggestions for further research.

Approach

Since our focus was on training, we restricted academic subject areas to methodological and technical courses, graduate-level courses, and continuing education programs. Studies conducted on K-12 populations were excluded unless they clearly contained training objectives, such as vocational instruction or foreign language training at the high school level.

Research on DL in the military and industry was acceptable unless it was oriented to educational programs. Literature reviews and planning reports discussing research and training issues were also included. Our selection process resulted in the codification of 43 research reports, seven of which were reviews of research literature and three of which were oriented to planning for implementation of training programs that included research and evaluation methods. The remaining 33 reports were classified as follows:

- 27 (82%) included VTT as a communication medium (13 one-way video/two-way audio; 6 two-way video/two-way audio; 2 videotape exclusively; 6 were not clearly identified
- 3 (9%) were audio only (including audiographics)
- 3 (9%) included computer-mediated instruction
- 6 (18%) combined videotape with another DL medium
- 4 (12%) combined print with another DL medium
- 1 (3%) combined CBT with another DL medium

Findings

Descriptives

Of the 33 reports, 31 reported learning outcome data and 14 had a comparison group (trainees received the information live, rather than at a distance). The median size of the DL group represented in a single report was n=106 (range: n= 14 to 1,044 students) and the median size of the comparison group was n=84 (range: n=18 to 401 students). It should be noted that some reports included several iterations of the same course or had several classes reported as a single investigation. When this was taken into account, the average "class size" for a separate DL course was approximately 36 and the average size of a comparison class was approximately 22. Altogether, the database represented 5,438 students being trained through DL and 1,806 comparison students, a ratio of one comparison student for every three DL students.

Thoroughness of Reporting

Using the three principal features of DL offered by Moore and Kearsley (1996)—course design, instructional techniques, and methods of communication—we categorized the thoroughness of the training reports. Table 1 presents the percentage of the 33 studies as (a) fully described, (b) partially described, or (c) did not mention these three key features. Clearly the course design/ conversion and, to a lesser extent, the instructional techniques of distance learning training are not being thoroughly reported in the literature.

Concerns in Experimental Design

Until recently, researchers and practitioners had stated with few qualifications that DL-based training was superior, or at least equivalent; to. traditional instruction. This advice was based on the many studies which found no statistically significant difference in attitudes or learning outcomes between DL and traditional courses (the "no significant difference phenomenon": Russell, 1999). Recently, however, researchers have challenged this verdict (Phipps & Merisotis, 1999; Wisher & Champagne, 1999; Walsh, Gibson, Miller, & Hsieh, 1996). The favorable conclusions regarding DL have been based, to a large extent, on the use of flawed research designs and inadequate measures. Although differences may exist, most existing studies are not designed to test meaningful differences in the way training was delivered. Common problems in the 33 studies we reviewed were (a) not controlling for extraneous variables, (b) lack of random assignment of subjects, (c) questionable validity and reliability of the instruments used to measure outcomes and attitudes, (d) absence of a control or comparison group; (e) use of a comparison group that was substantially different than the treatment group (i.e., use of "convenience samples"); (f) absence of meaningful pretests; and (g) not taking into account individual differences, particularly learning styles, among students.

Table 1. Assessment of Completeness of Information in Research Reports

	Course Design / Conversion	Instructional Techniques	Methods of Communication
Fully described	30%	30%	50%
Partially described	30%	45%	50%
Not mentioned	40%	25%	0%

These many shortcomings can all be categorized under a single concern: the lack of internal validity. To say that a study of a DL training program possess *internal validity* means that it can be established that the cause or treatment (i.e., interactivity of DL media) was responsible for the outcomes or effects of the program (e.g., performance or satisfaction). If internal validity can not be demonstrated due to the research design or to the inability to eliminate other possible causes, then the researcher may not conclude that the treatment "worked" (i.e., caused the higher performance). Table 2 defines the seven most common "threats" to internal validity found in the 33 studies. A *threat* is an alternative explanation for the results that occur in a study. Researchers who measured the outcomes of interest may have mistakenly attributed success or failure to the DL media when it may have been due to another cause, such as the threats illustrated in Table 2.

Several conclusions may be drawn from this review of empirical studies. First, because random assignment of students to the treatment and comparison groups was not conducted (or not possible), none of the 33 studies, individually, can reject the possibility that the positive results were due to other factors besides the use of DL media. Future studies which permit random assignment of students to groups or that measure performance while students alternate between groups (e.g., Miller, McKenna, & Ramsey, 1993) would allow more conclusive results to be drawn.

Second, the use of "convenience samples" to serve as comparison or treatment groups makes it difficult to draw meaningful conclusions. In most cases, there are specific reasons (e.g., location, availability of technology, convenience, and job requirements) for why students attend training programs delivered via DL media. There may be fundamental pre-existing differences between students who choose to attend a DL-based training program over a non-DL based training program that are reflected in the measures of performance.

Table 2. Threats to Internal Validity

Threat	Definition	Alternative explanation(s)
1. History	Changes in outcomes due to a specific event that occurs during the training	Participants may have learned similar training material from an experience on the job
2. Maturation	Changes in outcomes due to changes in the participants themselves	Participants may learn things on their own, become less interested in the program or more fatigued over time.
3. Testing	Responses to a test may be inflated due to familiarity with questions	Pretest measures may sensitize participants to the knowledge-based items, who then score well on a posttest performance measure due to this familiarity.
4. Instrumentation	Changes may occur in the measuring instrument between administrations	A posttest of an objective performance test may be easier or more difficult than the first administration.
5. Mortality	Certain types of people may drop out of a treatment group before the treatment is completed	Students with less ability, motivation, or time resources may become discouraged and drop out during the program, resulting in an inflated average posttest score
6. Selection	Differences in outcomes are due to inherent differences between members of different groups	A DL group may have older, more educated and experienced participants than a non-DL group.
7. Ambiguity about causality	Cannot be determined which of two variables occurred first	Does teacher effectiveness enhance the DL environment or does the DL environment enhance teacher effectiveness?

Third, nearly all the studies reviewed suggest that differences between groups were solely due to the DL media used rather than to individual student differences such as learning style, self-efficacy, or motivation. In a traditional classroom, most instructors realize that not all students learn best using the same method. This recognition of individual differences in the traditional classroom should extend to the DL classroom. Interesting avenues of future research include the identification of students' goal orientation (learning vs. performance goals) with its influence on success, self-efficacy, and accurate measure of students' skills, knowledge, and abilities.

Finally, researchers and evaluators should be more complete in reporting the key elements of DL. These include course design/conversion, instructional techniques, and methods of communication.

References

Miller, J. W., McKenna, M. C., & Ramsey, P. (1993). An evaluation of student content learning and affective perceptions of a two-way interactive video learning experience. *Educational Technology, 33*, 51-55.

Moore, M., & Kearsley, G. (1996). *Distance Education: A systems view*. Belmont, CA: Wadsworth.

Phipps, R., & Merisotis, J. (1999). *What's the difference?: A review of contemporary research on the effectiveness of distance learning in higher education.* Report prepared at the Institute for Higher Education Policy [http://www.ihep.com]

Russell, T. L. (1999). *The "no significant difference" phenomenon.* [http://teleeducation.nb.ca/ nosignificantdifference/]

Walsh, W. J., Gibson, E. G., Miller, T. M., & Hsieh, P.Y. (1996). Characteristics of distance learning in academia, business, and government. AL/HR-TR-1996-0012, Brooks Air Force Base, TX: Human Resources Directorate.

Wisher, R. A., & Champagne, M. V. (in press). Distance learning and training: An evaluation perspective. To appear in S. Tobias & J. D. Fletcher (Eds.), *Handbook of training*. New York: Macmillan.

Biographical Sketches

Dr. Matthew V. Champagne is research director and founder of *Interactive and Online Training Assessment (IOTA) Solutions* in Troy, New York and a Senior Research Fellow with the U.S. Army Research Institute through the Consortium Research Fellows Program. *IOTA Solutions* provides technology-based evaluation systems for distance learning and training programs in universities, industry, and the military. He holds a Ph.D. in Industrial and Organizational Psychology from Purdue University.

Address:
Fax: (603) 619-0334
E-mail: champagne@iotasolutions.com

Dr. Robert A. Wisher is a Senior Research Psychologist with the U.S. Army Research Institute in Alexandria, VA. He is responsible for research on the use of distributed training technologies for use by soldiers in distance learning and "on demand". He holds a Ph.D. in Experimental Psychology from the University of California, San Diego.

Address: U.S. Army Research Institute
5001 Eisenhower Avenue
Alexandria, VA 22333-5600
E-mail: wisher@ari.army.mil
Fax: (703) 617-3573
Phone: (703) 617-5540

Ms. Jennifer L. Pawluk is a Research Fellow with the U.S. Army Research Institute. Her current research focuses on learning at a distance, specifically regarding the development, analysis, and interpretation of Internet-based evaluations for distance training programs. Her research also involves the examination of student learning styles, namely students' goal orientation and how this is related to his/her performance as a distance learner. She is working toward her master's degree in Industrial and Organizational Psychology at Rensselaer Polytechnic Institute.

Address: Rensselaer Polytechnic Institute
Troy, New York 12180
E-mail: pawluj@rpi.edu

Ms. Christina K. Curnow is a Research Fellow with the U.S. Army Research Institute and is a doctoral student of Industrial and Organizational Psychology at George Washington University. Her research responsibilities center on designing, developing, and analyzing distance learning evaluations for the Army National Guard. Her dissertation is on the topic of social and cognitive individual differences in distance learning course performance and satisfaction.

Address: George Washington University
Washington, D.C. 20083
E-mail: curnow@ari.army.mil
Phone: (703) 617-0356

Creating Accessible Content for the World Wide Web and Distance Education

Wendy Chisholm, Human Factors Engineer
Trace R&D Center, University of Wisconsin-Madison

Abstract

In recent years, an increasing emphasis has been placed on ensuring the accessibility of the World Wide Web to people with disabilities. Some of the factors that have raised awareness are the growing community of people with disabilities that use the Web, the increase in the number of courses that use the Web to deliver course content, and governments requiring equal access to public Web sites and information technologies. In April 1997, the World Wide Web Consortium (W3C) launched its Web Accessibility Initiative (WAI) – an international group of people working to ensure that new technologies developed within the W3C support accessibility. This paper provides an introduction to the issues faced by people with disabilities in accessing Web-based distance education courses as well as an overview of some solutions.

Key words: World Wide Web; Accessibility; Disability; ADA

Introduction

Learning how to make electronic documents accessible for people with disabilities is important for people providing educational materials over the Internet since students will have varying abilities and may be using a wide range of technologies. The Americans with Disabilities Act (ADA, 1996) requires State and local governments and "places of public accommodation" to communicate effectively with individuals with disabilities, unless doing so would result in a fundamental alteration to the program or service or create an undue burden. The effective communication rule "applies to covered entities using the Internet for communications regarding their programs, goods or services since they must be prepared to offer those communications via an accessible medium (Waddell, 1999)."[1]

To address the growing concern about how to create Web sites that are accessible as well as to promote accessible design, the W3C[2] issued the Web Content Accessibility Guidelines 1.0 (WCAG) on May 5, 1999. The WCAG contains 14 guidelines, a checklist, and an associated document of examples. The document represents a vendor-neutral set of guidelines that can act as a central reference and reflects consensus from industry and the disability community.

---

[1] Some news articles have claimed that the U.S. Government ruled that *all* Web sites must be accessible. These reports are inaccurate.

[2] The W3C (World Wide Web Consortium) is the de facto standards body for Web technologies. In recent years they have developed HTML4 (the current HTML language), CSS (Cascading Style Sheets), XML (Extensible Markup Language), and others.

Overview of Disabilities: Issues and Opportunities

Disabilities are usually grouped into four major areas: physical, cognitive, auditory, and visual. A person may have disabilities involving any combination of the areas, as do many older adults. Distance education courses can provide new opportunities for people with disabilities if designed well, or create new barriers to information if designed poorly.

Physical disabilities include weakness, or paralysis of muscles, lack of dexterity, and other motor impairments including speech disabilities. When a person is unable to control their movements smoothly he/she is often unable to use a standard keyboard or mouse. Some people are also unable to use voice input because of speech impairments. Therefore, people with physical disabilities often interact with a Web page through some type of keyboard. Alternative keyboards often have large, well-spaced buttons and often provide control of the mouse functions.

Students who have difficulty moving about in physical space, are finding it liberating to move about in virtual space. Distance Education has opened up educational doors for students who have a difficult time physically getting to class. Students with communication disabilities, who have often found it difficult to participate in class discussions vocally, can now participate via e-mail and chat.

Cognitive, language, and learning disabilities include a wide variety of conditions related to the functions of the brain that tend to get lumped together into one group although they are quite different. These include memory loss, the inability to read, attention deficit disorders, etc. People with cognitive disabilities may benefit from predictable organization, icons, a single focus point (rather than changes at multiple points on the screen), consistency, and simplicity of Web materials.

In a physical classroom, a student with a cognitive disability may find it hard to keep up with the pace of class discussions, or to keep their attention on text that is being read. In the virtual classroom, students can experience the classroom on several levels, helping them to keep their attention focused. In text-based discussions, students can reread comments or read at their own pace. If they have difficulty reading written text, they may have electronic text spoken aloud by a speech synthesizer.

Auditory disabilities are impairments of hearing, including deafness and hearing loss. When a person is unable to hear sounds, such as speech or important sound effects, these sounds need to be presented visually – through captions or other means.

Students with auditory disabilities are able to communicate with peers through e-mail and chat programs. This gives students the ability to communicate directly with peers rather than through a translator. Chat programs operate in a similar manner to TTYs – the telecommunication devices used by people who are deaf.

Visual disabilities such as blindness, low vision, color deficiencies, etc. are caused by a variety of factors including congenital disease and injury. Some people may only have peripheral vision with a lack of vision in the core of their vision, others may not be able to distinguish between colors, and some may have no sight at all. To make information available to people with visual disabilities, all visual information must be available via text or sound, no mouse should be required, and distinguishing information should not depend on color. People with visual disabilities use an array of assistive technologies such as screen readers (software that communicates with speech synthesizers to speak text that appears on a computer screen aloud), and screen magnifiers (software that magnifies the images and text on a computer screen).

Printed information is not accessible to students who are blind, and often difficult to access for students who have low vision. Currently, students may have an assistant to read printed materials to them, or if the student reads braille, a braille copy may be produced. Braille production is expensive, bulky, and may reach the student after the rest of the class has finished the material. Also, not all people who are blind read braille. When information is available digitally, students can have their screen reader software read the text aloud, or have it sent to a dynamic braille display. In this manner, the information is available for less cost and at the same time as their peers.

Specific Issues for Distance Education and Web Technologies

The University of Toronto's Adaptive Technology Resource Centre reviewed seven Courseware Products for accessibility earlier this year (Harrison and Gay, 1999). The review looked at the accessibility and functionality of the products from the perspectives of both the designer of the course materials and the student or end user. The results show that all of the products analyzed have some level of support for accessibility, but that they also all have some major accessibility issues. Since these products are often used to create the Web content for a class, instructors need to be aware of what the tool does and does not support in terms of accessibility.

Four of the seven products were missing critical text equivalents for images. This means that students who rely on speech synthesized output of the information (students with visual disabilities and some students with physical and cognitive disabilities) will not receive the information presented graphically.

Four of the seven products use frames for navigation mechanisms. People with visual disabilities who use screen readers, may be able to access all of the information in a frame, but may not be able to easily figure out how the contents of multiple frames relate to each other. People with cognitive disabilities may also have difficulty synthesizing the potential overload of information. One system allows users to view pages in frames or not. This type of solution, providing an alternative navigation structure that does not use frames, can be effective. However, it will increase the maintenance time, since the information is stored and updated twice. The ultimate solution to the frames issue seems to rest with the browsers developing mechanisms to effectively navigate frames. Work is being done in this area.

Three of the products use tables to layout text. Tables are becoming less of an accessibility issue, because screen readers can linearize the columns so that each column may be read on its own and tools are being developed to allow users to navigate data tables cell by cell. Without linearizing the table, the screen reader will read across the columns creating a garbled sentence with text from each column. It is not clear how many people use older screen readers, but it is likely to be quite a lot since screen reader technology is expensive.

Some of the other issues discovered in the evaluation seem less critical for accessibility, such as poor help files. One tool uses Java-based tools. As with HTML, Java may be used to create either very accessible applications or completely inaccessible applications. IBM has produced a set of guidelines for developers who want to create accessible Java applications (1999).

Distance education also makes use of collaborative Internet technologies such as chat rooms and electronic white boards. These tools allow students to interact with other students, researchers, and professionals from around the world. For students with speech and hearing disabilities these technologies often open up new experiences for them. Students with physical and visual disabilities may run into some barriers with the technology due to the graphical and mouse-oriented nature of the interactions. Several groups are investigating these issues, such as the ATRC (ATRC, 1999), the Trace Center (Trace, 1999), and members of the National Partnership for Advanced Computational Infrastructure (NPACI, 1999).

Overview of Solutions

The biggest barrier to accessibility in this area is design that does not allow people to interact with the information in a way in which they are able. There are two questions that are important in considering this issue. First, can some one access the information presented on a site? Second, can they interact with it?

An example of access to information. Important textual content on a page is often included in an image so that the designer can control the layout, color, and font. However, if a text equivalent is not associated with an image, a person who is using software to read the page aloud will not hear any information.

An example of interaction with information. Some Web designs are only usable if you use a mouse. People with physical and visual disabilities are often not able to use a mouse and therefore can not use such designs.

Web sites need to "transform gracefully." In other words, sites need to be able to support the abilities of a user and the user's environment. In the case of using the mouse to activate a menu structure, if the structure is also operable via the keyboard, the menu mechanism is said to transform gracefully. For the case of text presented in images, if a text equivalent **is** associated with an image, the screen reading/speech synthesis software will speak the text aloud and the user has access to the information. There are also strategies that a designer can follow to minimize their use of images and use text instead. These are all variations of strategies to make a site transform gracefully. This is the core idea of the Web Content Accessibility Guidelines.

Providing text equivalents for non-text elements such as video and audio facilitates graceful transformations. Text may be rendered in a variety of ways: as speech, as braille, or visually on the screen or on paper. Displayed on the screen, it can be magnified, displayed with different fonts or font sizes, and in the user's preferred colors.

Conclusion

Distance Education is opening new doors to students and faculty with disabilities. However, to ensure that these doors remain completely open, distance education programs need to be designed to transform gracefully. The WAI of the W3C has produced a set of guidelines to help Web developers create accessible content.

References

ADA. (1996). The Department of Justice ADA home page. Available at: http://www.usdoj.gov/crt/ada/adahom1.htm

ATRC (1999). Adaptive Technology Resource Centre at the University of Toronto. Available at: http://www.utoronto.ca/atrc/

Chisholm, W., Vanderheiden G., & Jacobs, I. (1999). *Web content accessibility guidelines 1.0*. http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/

DOJ (1996). *Opinion issued by the US DOJ discussing the applicability of the ADA to the Web*. http://www.usdoj.gov/crt/foia/tal712.txt

Harrison, L., & Gay, G. (1999). *Courseware accessibility study*. Available at: http://snow.utoronto.ca/best/crseval.html

IBM (1999). *IBM guidelines for writing accessible applications using 100% pure Java*. Available at: http://www.austin.ibm.com/sns/snsjavag.htm

NPACI (1999). *National partnership for advanced computational infrastructure*. Available at: http://www.npaci.edu/

Trace (1999). *Trace Research and Development Center at the University of Wisconsin-Madison*. Available at: http://trace.wisc.edu/

Waddell, C. D. (1998). *Applying the ADA to the Internet: A Web accessibility standard*. http://www.rit.edu/~easi/law/weblaw1.htm

WAI. (1999) .*Web accessibility initiative*. http://www.w3.org/WAI/

W3C. (1999). *World Wide Web Consortium*. http://www.w3.org/

Biographical Sketch

Wendy Chisholm is the lead editor of the W3C Web Content Accessibility Guidelines as well as a Human Factors Engineer at the Trace Research and Development Center. She investigates how to make emerging mobile and Internet technologies accessible for people with disabilities and more usable for all.

Address: Trace Research and Development Center
University of Wisconsin–Madison,
5901 Research Park Boulevard
Madison, WI 53719
E-mail: chisholm@trace.wisc.edu
URL: http://trace.wisc.edu
Phone: (608) 262-6271
Fax: (608) 262-8848

A Constructivist Approach to Satellite Instruction

Tom Cody, Ph.D., Associate Professor
Western Illinois University

Andrew Kerr, Instructional Technologist
Western Illinois University

Introduction

Western Illinois University is part of a five-state partnership that includes Florida, Illinois, New Mexico, North Carolina and Texas. The USDLC, the United Star Distance Learning Consortium provides satellite instruction to all fifty states through it's network: Star Net. In 1997, the United States Department of Education continued the funding of Star Net through a five-year federal Star Schools grant. As part of this grant, Western Illinois University was to develop programming that would have a positive impact on student performance utilizing engaged learning. In addition to the Star Schools initiative, Western Illinois University also provides several university courses through satellite, including an entire masters degree in Instructional Technology and Telecommunications.

One of the satellite programs originating from Western Illinois University is a program on integrating engaged learning and technology into the K-12 classroom. *Engaged Learning: Shooting for the Stars!* The series is now in its second season and has been well received from participating schools around the country. What sets this program apart from traditional satellite delivered programs is that a new interactivity component is being introduced: the Internet. The programs will be carried live via video streaming over the Internet. In addition, program participants will have the opportunity to interact with the program host and other participants through an on-line, live chat-room, threaded bulletin board, and utilize and post resources to the Web site. Talking about a constructivist approach (engaged learning) in the classroom disseminates the information, but *Shooting for the Stars!* hopes to model (as much as possible) the principles of engaged learning to have a profound impact on the participating teachers and their classrooms.

Engaged Learning as a Constructivist Approach

A key component to engaged learning is critical thinking on the part of students and the incorporation of technology into the learning process. These processes include the following eight indicators of engaged learning: vision of learning, tasks, assessment, the instructional model, the learning context, grouping, teacher roles, and student roles (Jones, Valdez, Nowakowski and Rasmussen, 1995). Engaged learning is a teaching model that changes the focus of the instructional process from the teacher as a disseminator of information to the teacher as a facilitator of information. Engaged learning involves more student interaction, more school collaboration, and more collaboration among teachers. Technology (especially computers and computer applications) are tools that allow this model to come to fruition. The engaged learning model ensures that learning is the primary function of the activity, not the activity itself. There is a difference between an engaged activity and engaged learning. In engaged learning, instructional alignment is the key. Objectives lead to instruction, which leads to measurement, which leads to evaluation. Where as in an engaged activity, the activity itself is the focus with no reference to objectives, instruction, measurement or evaluation.

The engaged learning model facilitates tasks that are authentic and challenging. The teacher's role of disseminator of information now changes to facilitator of information where the teacher acts as "a guide on the side" in the engaged learning model. Conditions that constructivists typically address that relate to the engaged learning model are: cognitive apprentice (a mentor relationship between student and teacher), the use of realistic tasks and problem solving, and the use of multiple perspectives (Bednar et al, 1991). In comparing the two models, realistic tasks relate to authentic tasks, cognitive apprentice to the "guide on the side" or facilitator of information and realistic tasks and problem solving to authentic tasks, and multiple perspectives relates to heterogeneous groupings (where diverse opinions and cultural differences are explored). In both models, learners draw upon their interpretation of prior experiences and ideas to aid in the transfer of knowledge and/or skills solve problems. Rochel Gelman (1994) illustrated that one of the underlying principles of constructivism is that learners are an active participant in the educational process and that through this participation they use their experiences and prior knowledge to interpret new stimuli. Construction of one's ideas or concepts is mostly a result of discussion and debate (an active form of learning) versus the traditional method of teaching, where the student is a receiver of information and the teacher disseminates information , traditionally through lecture.

When students are involved in the engaged learning process, problems are able to be perceived as meaningful and relevant. Students try to fill in the missing variables when presented with stimuli in which they are unfamiliar. Teachers as facilitators present students with a problem set, then students analyze the problem either individually or in groups, research, discuss, and produce plausible solutions. As a facilitator, the teacher models, guides and coaches students in formulating these solutions. Students must be given the opportunity to seek relevance in the learning process (Finkle and Torp, 1995).

When compared to the traditional method of teaching, teachers and students involved in the engaged learning model may be in for a few surprises. In the initial phase of the process, students and teachers may be uncomfortable in their new roles. Striving to solve this cognitive dissonance facilitates the learning process. Risk taking for both teachers and students is a major component of the engaged learning model. Students must take more control of the learning process and teachers must be willing to relinquish some of their control and empower their students (Brooks and Brooks, 1993).

Engaged Learning Applied to Satellite Course Delivery

Research has shown that collaborative inquiry strategies are among the most effective teaching learning strategies (ISBE, 1997). The very nature of a course delivered through satellite limits teacher/student interaction, let alone student/student interaction. In fairness to satellite course instructors, it is similar to college lecture hall courses filled with over one hundred students (little interaction in that kind of environment, as well). The component missing in the infrastructure of satellite delivered courses is the ability to be interactive. Two-way satellite broadcasts are expensive and are not practical for multiple sites. In the case of the satellite masters program at Western Illinois University, almost fifty sites have utilized (let alone the 2,500 Star Net sites). Current interactivity in many of the broadcasts have been done through phones and faxes. These, too, are limiting and only allow for interaction among the teacher and one site (Barker, 1995). Conference calls between multiple sites have also been used, but this can be confusing and interactivity is still limited. Currently, the cheapest alternative to add interactivity to the satellite delivered course is the Internet. The Internet adds another dimension to the possibilities of providing instruction in a satellite based course. Communication can now take place with other students in the class, as well as with the instructor. Although the bulk of information is delivered via satellite, students are encouraged to take advantage of the synchronous and asynchronous features of a class supported with the Internet.

Applying the principles of engaged learning to satellite course delivery using the Internet as an additional medium is a daunting task. There are many variables that have to be considered when adding these new communication components including instructional design, Internet service, and how the satellite course content needs to change. In addition, the new roles of the teacher and the student have to be addressed in order for a successful engaged learning experience. The lessons learned during the *Engaged Learning: Shooting for the Stars!* programs will provide many answers on how to more effectively incorporate engaged learning into actual courses.

References

Barker, B.O. (1995). *Strategies to ensure interaction in telecommunicated distance learning.* Paper presented to the Third Distance Education Research Symposium, Pennsylvania State University.

Bednar, A. K., Cunningham, D., Duffy, T. M., & Perry, J. D. (1991). Theory into practice: how do we link? In G. J. Anglin (Ed.), *Instructional technology: Past present and future.* Englewood, CO: Libraries Unlimited.

Brooks, J. G., & Brooks, M. G. (1993). *The case for constructivist classrooms.* Alexandria, VA: Association for Supervision and Curriculum Development.

Gelman, R. (1994). Constructivism and supporting environments. In D. Tirosh (Ed.), *Implicit and explicit knowledge: An educational approach.* Norwood, NJ: Ablex.

Illinois State Board of Education. (1997). *Learning through technology: Study group framework and profile tool.* Springfield, IL: Illinois State Board of Education Center for Learning Technologies.

Biographical Sketches

Tom Cody is a professor in the Education & Interdisciplinary Studies Department at Western Illinois University. Cody has been involved with satellite delivered instruction as well as compressed network and Internet delivered instruction. He has worked extensively as an engaged learning trainer for school districts. Cody is also the content editor and host of the U.S. Department of Education funded project, *Engaged Learning: Shooting for the Stars*.

Address: Education & Interdisciplinary Studies Department
80 Horrabin Hall
Western Illinois University
Macomb, IL 61455
E-mail: Tom_Cody@ccmail.wiu.edu
Phone: (309) 298-1229
Fax: (309) 298-2222

Andrew Kerr is the Instructional Technologist for the College of Education and Human Services at Western Illinois University. Kerr's primary interest is integrating Engaged Learning principles into distance education and asynchronous courses. He is also the executive producer for the U.S. Department of Education funded project, Engaged Learning: Shooting for the Stars.

Address: College of Education & Human Services
101 Horrabin Hall
Western Illinois University
Macomb, IL 61455
E-mail: ra-kerr@wiu.edu
Phone: (309) 298-3083
Fax: (309) 298-2222

Using a Collaborative Model of Instructional Design for the Development of a Distance Education Course and Faculty Training

Simone Conceição-Runlee, Instructional Design/Technology Consultant
School of Education, University of Wisconsin-Milwaukee

Ann Hains, Associate Dean for Outreach & Technology
School of Education, University of Wisconsin-Milwaukee

Patricia Caro, Associate Professor
University of Wisconsin-Stevens Point

Rosemary Lehman, Senior Outreach/Distance Education Specialist
ICS, University of Wisconsin-Extension

Bruce Dewey, Outreach/Distance Education Specialist
ICS, University of Wisconsin-Extension

This case study describes the collaborative model of instructional design used to plan a distance education course on Early Childhood Special Education (ECSE). The course involved six institutions of higher education in the state of Wisconsin, 12 faculty members, and three instructional designers. A combination of web-based and videoconferencing instructional strategies were employed to design the course and prepare faculty for teaching. The instructional design process involved six months of work prior to the start of the course and four months during the delivery of the course.

Collaborative Instructional Design Model

The nature of the collaborative venture is based on the idea that if one capitalizes on the collective expertise of all ECSE faculty members in the state of Wisconsin, personnel in rural and remote areas of the state are better served. The main feature of the design is the collaborative effort among faculty members and the instructional designers.

Instructional Design Philosophy

The instructional design philosophy is based on the constructivist framework, which states that learners construct their own meaning through intellectual engagement and investment in personally meaningful tasks. Designing instruction also involves a constructive process, especially when the instructional design is identified having a collaborative framework. In this case, learners are the faculty members who work collaboratively to design a course, learn from each other's expertise, and gain experience in using distance education technologies.

Faculty members created their own knowledge on how to develop instruction using distance education technologies by the way they made connections between instructional topics and the instructional strategies they use for teaching. Creating meaning of the use of the technology consisted of analyzing and synthesizing their teaching experiences in order to develop new understandings about teaching in the web-based and video conferencing environments. It was more than simply understanding their experiences in the new environments, it was about exploring deeply the meaning of these experiences in their lives and how these experiences shape their understanding of distance education. Thus, learning how to use distance education technologies fostered an integration of thinking, feeling, and acting (Conceição-Runlee & Daley, 1998).

Using a constructivist view of instructional design fostered the development of shared meaning between instructional designers and faculty members or among faculty members on the team. Arriving at shared meaning is a complex task that is primarily social and relies on the process of shared inquiry. Faculty members and instructional designers together probed the connections between new teaching strategies using distance education technologies and previous teaching experiences with the idea of developing a mutual understanding.

For faculty members to construct meaning of their teaching experiences, they needed to understand and analyze their own learning processes. Here faculty members went through the process of learning how to learn by incorporating reflective and metacognitive strategies into the instructional design process. In this case, evaluation and assessment were focused on the faculty members understanding of the processes and the meanings that they created from their own learning. They became actively involved in the assessment process and articulated what they learned and how they made the connections to their previous experiences. Learning based in the constructivist framework is often unique and unexpected (Conceição-Runlee & Daley, 1998).

Characteristics of the Model

The Collaborative Instructional Design model is described as having non-linear, reflective, collaborative, participatory, and creative characteristics. The development of instructional design was non-linear because there was no specific task that had to be completed before all others. Problems, improvements, or changes were made depending on the context. The design was constantly being assessed. The planning process was reflective because it involved "gaining greater insight into both the context and the influence of [the] work on that context" (Kearsley & Shneiderman, 1998, p. 14).

Faculty members and instructional designers were constantly reflecting in action. The development of instructional design was also collaborative because it involved group design. Faculty members who work together to teach one course must have a shared vision. A shared vision emerged during the development process. The instructional design was participatory as faculty members and instructional designers cooperated in the design efforts by sharing responsibilities in the design. This model was also creative because it conveyed the participants' multiple perspectives.

Instructional Design Process

Using a constructivist framework to design instruction required some direction in order to guide faculty members through the process of building the course. The collaborative model process was based on Lehman's (1996) *Seven Keys to Success*, which was developed as a practical resource for distance education teams. The seven keys to success include: (1) understanding the participants, (2) knowing the environment, (3) being a team player, (4) developing formats and strategies, (5) creating interaction activities, (6) integrating support, and (7) monitoring for quality.

Learners. Understanding the learners was an important task because of the diversity of locations the course was offered in the state. Learners from rural areas may have different needs than the ones from metropolitan areas. For example, transportation may be a problem for students who live in remote areas; requiring class assignments that involve field visits could be problematic for the learners who live in these areas. It is critical to consider students' needs before the start of the course. For example, some students may require special needs such as an extra monitor, sign language interpreter, wheel chair accessibility, large print, etc. One way to address anticipated needs is through a questionnaire in the registration form sent to students ahead of time.

Environment. Designing a distance education course using web-based and videoconferencing technologies was not an easy task when team members did not have the appropriate skills to communicate with learners in these environments. The dual challenge for faculty exists in learning how to use technologies themselves while providing for student technical training and course content delivery (Murphy, 1998). Therefore, a new component becomes an essential part of the design: education of the instructor on how to use the distributed technologies. As the web page for the course was developed (http://www.uwm.edu/Dept/early-childhood), a link to a separate web page was designed for faculty development. The faculty development web site served as a practicing site for instructors to use as learners and a space for recommended resource links about teaching and learning. Two workshops on how to develop a class via videoconferencing were offered to faculty members a few months before course delivery. During the workshop sessions faculty had the opportunity to develop a ten-minute presentation to practice teaching via compressed video. Using the web and videoconferencing technologies involved many variables that change the teaching environment. Faculty members need to understand the teaching environment and become more comfortable with it in order to adapt to the technology.

Being a team player. Working as a team was not an issue because faculty members were already committed to the development of the course. They also had strong interpersonal relationships gained from various statewide work groups, as well as Department of Public Instruction support for networking during state sponsored initiatives (Hains et. all, 1998). The only concern was to work as a team in an environment that required new skills, other than content knowledge.

Formats and strategies. The format and strategies for teaching this course involved a series of procedures in developing each session of the course. Each session (also called a module) consisted of a two and a half hours of class meeting, 50 minutes via compressed video, and the remainder of the time face-to-face with the faculty site coordinator(s). The modules are comprised of a course overview, readings, schedules, protocol, and assignments. The planning of each module involved collaborative decisions on the overall framework, scope, and sequence of the course. A team of faculty members that designated a team leader designed each module. One instructional designer designed the web site and facilitated the development of each module by assisting faculty members with the selection of format and instructional strategies. Two other instructional designers facilitated a workshop on how to use compressed video. One or two faculty members performed the role of coordinators for each site. Many of the format and strategies used for each module were dependent on the development of visuals in order to be effective for the learner. Faculty members needed to know how to create and use visuals. For example, font size and color that would give crisp and concise information for the learner in addition to horizontal visuals work better for videoconferencing, as does short and simple text. Visuals provided during the videoconferencing session can provide essential course information, while in-depth information can be provided in print materials or placed on the course web site. The development of well-designed visuals for use with technology is very crucial in developing format and strategies.

Interactive activities. Creating interactivity among sites was a necessary aspect of the course. Interactivity linked learners to content, learners-to-learners, and learners-to-instructors. Interactivity involved individual activities and group projects. The goal was to have short, intense, well-planned, meaningful, enjoyable, involving, and sharing activities (Lehman, 1996). The team members decided which instructional strategies and media they considered more appropriate for each module.

Support. One of the instructional designers coordinated and offered a combination of instruction in pedagogical methodology, hands-on training with instructional technology, course design and class preparation, and group support activities as the design of the course was being developed. The Department of Public Instruction consultant provided information on current standards for early childhood special education and two compressed video consultants with the University of Wisconsin-Extension provided hands-on activity on the use of the equipment and provided recommendations of the most appropriate ways to use compressed video for instruction. The instructional designer coordinator maintained continued contact with the team via email, provided updated information on the web site, and teamed with one of the faculty members to check the status of the project and provide guidance to others.

Evaluation. Evaluation was centered on the faculty members understanding the processes and the meanings that they created from their own course design learning. This course used several means of evaluation to encourage change and modify learning, roles, and the overall program. The evaluation was also used for accountability and quality assurance purposes. One of the faculty members was in charge of developing the evaluation plan. The evaluation plan was comprised of several components:

1. Student appraisal of course content: It involved a pre- and post-test assessment that measured students' immediate understanding of content. After each class students were asked to complete a learning journal. This learning journal provided anecdotal information about students' understanding of course material and learning.

2. Student evaluation of technology: It involved a student pre- and post-test evaluation to measure effectiveness of student knowledge, understanding, and use of technology.

3. Student evaluation of collaboration with other students: It involved a pre- and post-Student Collaborative Inventory that measured student skills, interest, and peer collaboration.

4. Student evaluation of faculty: Each faculty member used their respective institutional faculty evaluation form. In addition, a standard evaluation form for this course was given to each student at the end of the course to evaluate faculty members.

5. Delineation of rubric in order to evaluate reflective documents according to INTASC: Each assignment was aligned with the appropriate INTASC (Interstate New Teacher Assessment and Support Consortium) standard. Faculty members' grading of the assignments was used to measure acquisition of the standards.

6. Faculty evaluation: It involved a faculty pre- and post-test evaluation that identified changes in levels of technology skills, collaboration adeptness, and distance education teaching competency.

Instructional Strategies for Faculty Development

INSTRUCTIONAL STRATEGIES	INSTRUCTIONAL MEDIA							
	Course Web Site	Electronic Reserve	E-mail	WWW	On-line Forums	Compressed video	Video Tape	Electronic Presentations
Case study	X			X		X	X	
Collaborative learning			X	X	X	X	X	
Handouts	X	X		X				
Guest lecture					X	X		X
Interrupted lecture						X		X
Lecture						X		
Peer Presentation						X		X
Role-playing, performance						X		
Small group discussions					X	X		

Summary

Even though the use of web-based and video conferencing technologies for instruction is increasing, many faculty members may not be fully prepared to integrate these technologies into the curriculum. It is necessary to carefully consider how to facilitate the planning and design of a faculty development program based on a collaborative instructional design model. The outcomes of a collaborative instructional design approach include an environment where faculty learn how to teach with technology, a collaborative working relationship between faculty members and instructional designers, and constant feedback from instructional designers and other faculty members. This approach results in a non-threatening environment in which learning how to use technology for instruction is a process.

References

Conceição-Runlee, S., & Daley, B. (October, 1998). *Constructivist learning theory to web-based design: An instructional design approach.* Midwest Research-to-Practice Conference Proceedings. Ball State University, Muncie, Indiana. Available at http://www.bsu.edu/teachers/departments/edld/conf/constructionism.html

BEST COPY AVAILABLE

Hains, A., Conceição-Runlee, S., Caro, P., & Marchel, M. A . (Spring, 1999). Collaborative course development in early childhood special education through distance learning. *Early Childhood Research and Practice, 1*(1). Available at http://ecrp.uiuc.edu/v1n1/v1n1.html

Kearsley, G., & Shneiderman, B. (1998). Engagement theory: A framework for technology-based teaching and learning. *Educational Technology*, September/October, 20-23.

Lehman, R. (1996). The essential videoconferencing guide: 7 keys to success. Madison, WI: Instructional Communications Systems, UWEX.

Murphy, J. L. (1998). Students as learners and teachers. *Distance Education Report, 2*(7), 6-7.

General Course Web Site: http://www.uwm.edu/Dept/early-childhood

Faculty Development Web Site: http://www.uwm.edu/wcb.uwm/schools/999/999/sconceic/4/

Evaluation Plan Web Site: http://www.uwm.edu/Dept/early-childhood/Evaluation/eval.htm

Biographical Sketches

Simone Conceição-Runlee is an Instructional Design/Technology Consultant with the University of Wisconsin-Milwaukee School of Education Office of Outreach and Technology. Her experience includes the design of web-based courses for instruction and coordination of staff development activities for faculty and staff. She holds an M.S. in Adult & Continuing Education from the University of Wisconsin-Milwaukee and is currently a doctoral student in the Continuing and Vocational Education Program (CAVE) at the University of Wisconsin-Madison with focus on distance education and educational technology.

Address: University of Wisconsin-Milwaukee, School of Education
P.O. Box 413
Milwaukee, WI 53201
E-mail: simpass@uwm.edu
Phone: (414) 229-4615

Ann Hains is a professor in the Department of Exceptional Education at the University of Wisconsin-Milwaukee. She was program director of the early childhood special education program for ten years. Presently, she is an Associate Dean in the School of Education, and she coordinates the education outreach and technology initiatives.

Address: University of Wisconsin-Milwaukee, School of Education
P.O. Box 413
Milwaukee, WI 53201
E-mail: annhains@uwm.edu
Phone: (414) 229-5255

Patricia Caro is an Associate Professor in the School of Education at the University of Wisconsin-Stevens Point. In addition to teaching early childhood special education courses, she teaches general special education courses. Dr. Caro has taught one distance education course using ETN, prior to this collaborative effort. She received her Ph.D. from McGill University.

Address: University of Wisconsin-Stevens Point, School of Education
Stevens Point, WI 54481
E-mail: pcaro@uwsp.edu
Phone: (715) 346-3248

Rosemary Lehman is a Senior Outreach/Distance Education Specialist at ICS with 27 years of experience in media production, design elements and training, has been with University of Wisconsin-Extension for seven years. She holds a Masters in Television and a Ph.D. in Distance Education and Adult Learning. She has consulted and trained for audio, television, satellite, and compressed video; developed and published training materials, coordinated symposia and presented at distance education conferences.

Address: University of Wisconsin-Extension, Instructional Communications Systems
The Pyle Center, 702 Langdon St., Madison, WI 53706
E-mail: lehman@ics.uwex.edu
Phone: (608) 262-7524

Bruce Dewey is Manager of InfoSource and Audiotex Services and an Outreach/Distance Education Specialist with ICS, has been with University of Wisconsin-Extension for 23 years and has spent many years working nationwide with Instructional Design workshops and the elements of design. He holds a Masters from Syracuse University in New York, has completed post-Masters work in Instructional Technology, Instructional Development and Continuing Education, and has presented at distance education conferences.

Address: University of Wisconsin-Extension, Instructional Communications Systems
The Pyle Center, 702 Langdon St., Madison, WI 53706
E-mail: dewey@ics.uwex.edu
Phone: (608) 263-2749

Developing Learner Self-Direction in a Webcentric Learning Environment

Rita-Marie Conrad, Online Instructor
Florida State University

Introduction

Thirty-five years ago Charles Wedemeyer, professor of education at the University of Wisconsin-Madison, and associated with the Independent Study Division of the National University Extension Association of the U.S., forewarned that "not every student will be able to succeed by correspondence instruction. This is **not** an easy method of learning" (Keegan, 1986).

Distance learners have been traditionally characterized as responsible, motivated, autonomous, self-directed learners (Moore and Kearsley, 1996; Verduin and Clark, 1991, Keegan, 1986). Historically, students who worked well in isolation, with little or no external direction or feedback succeeded as a distance learner.

Self-directed learners use experts, institutions, and other resources to pursue the goals and standards they have set for themselves. They exercise skills in time and project management, goal-setting, self-evaluation, peer critique, information gathering, and use of educational resources (Grow, 1991).

Self-direction is considered a learned trait (Grow, 1991; Brockett and Hiemstra, 1995). Grow defines four stages of learners, Dependent, Interested, Involved, and Self-directed. Brockett and Hiemstra (1995) make corresponding statements to Grow's concept of stages of self-direction. They point out that self-direction should not be considered an "all-or-nothing" characteristic but rather should be viewed on a continuum with "high self-direction as the ideal mode of learning" (p. 30).

Strategies to Promote Self-Direction

Grow suggests that an instructor can help students advance through stages of increasing self-direction by matching teaching style to the learner's stage of self-direction. In his Staged Self-Directed Learning Model (SSDL) he defines a teaching style for each of the four learner stages. Stage 1, the Dependent Learner, benefits from methods such as coaching with immediate feedback, drills, and information delivery. Stage 2, the Interested Learner, needs goal-setting and learning strategies provided, and benefits from guided discussion. Stage 3, the Involved Learner, is more successful in an environment in which facilitated discussion, seminar, and group projects are utilized. Stage 4, the Self-directed Learner, benefits from individual work or self-directed group activities.

Stipek (1993) suggests the following five instructional strategies as promoting a subset of self-direction, autonomy and perception of control:

- Student participation in designing academic tasks.
- Student choice regarding how tasks are completed and their level of difficulty.
- Student choice of completion timeframe.
- Student evaluation of their own assignments.
- Student sets personal goals.

These strategies match those of Grow's SSDL Model, Stages 2 through 4, but do not address the dependent learner. However, if combined with strategies to promote Confidence as defined in Keller's ARCS Model (1995), the needs of all levels of learners as defined by Grow, are met. In addition to those already mentioned by Stipek and Grow, Keller suggests the following tactics to promote confidence:

- State instructional expectations of learners clearly
- Structure content so that it is easy to follow.
- Set an appropriate challenge for the audience.
- Reduce anxiety by providing exercises that are consistent with the instruction.
- Give students an opportunity to suggest improvements to the instruction.

Brockett and Hiemstra (1995) describe several ways in which self-direction can be facilitated and enhanced. They advise methods which converge with those above and additionally include the following:

- Assist the learner in defining his/her learning needs.
- Provide opportunities for peers to become acquainted with each other.
- Progressively decrease the learner's dependency on the instructor.

Burge and Frewin (1989) state that self-direction in a distance learning environment has traditionally been facilitated through self-pacing. They also propose giving learners more meaningful choices in "determining course structure and activities that will provide appropriate support and direction and encourage freedom to choose the content and methods for their learning."

Motivating Self-Direction in a Webcentric Environment

Motivating a student can be daunting in a face-to-face (F2F) mode and may seem insurmountable in a "faceless" mode such as webcentric distance learning. How can the strategies suggested above be implemented in a webcentric environment for all stages of learners?

The webcentric learning environment provides a myriad of resources and interaction possibilities that can promote self-direction. Such possibilities include interaction opportunities with the instructor, other students, and with a wealth of expert resources available through the Internet. This interaction can be facilitated through email, computer-mediated conferencing, and online chats. Various instructional strategies can be employed including online lectures, group projects, and self-directed project groups. Table 1 provides examples of some of the strategies and tools that can be useful in each stage of self-direction.

Table 1. Examples of Strategies to Promote Self-Direction in a Webcentric Environment

Self-Direction Stage	Instructional Strategy	Tool/Method
Stage 1- Dependent	Provide timely feedback on assignments.	Email – provide response time guidelines
	State Instructional expectations of learners clearly.	Syllabus on course site. Introductory email
	Structure content so that it is easy to follow.	Introductory Course Guide. Powerpoint slides
	Provide opportunities for peers to become acquainted with each other.	Ice breaker/introductory activity. Online profiles. Tips from previous students.
Stage 2 – Interested	Progressively decrease learner's dependency on the instructor.	Assign instructional roles to learners.
	Provide opportunities for reflective thinking concerning learning strategies and goals.	Online journals/notebooks.
Stage 3 – Involved	Learners provide feedback to peers.	Online peer review of assignments.
	Build a sense of community.	Conference activities. Collaborative assignments.
Stage 4 – Self-directed	Learners design and run activities.	Discussions facilitated by and activities designed by students/collaborative groups.
	Learners define their assessment.	Self-directed projects
	Expert resources are utilized.	"Ask an Expert" activities

Promoting Self-Direction Through Course Design

As a course begins, it should be assumed that all learners are at the early stage of self-direction. Gradually move activities into a more self-directed mode. This can be accomplished by beginning with introductory activities which are more dependent upon or led by the instructor. As learners become more familiar with the environment and technology, provide activities that contain more peer-to-peer interaction and instructor-guided discussion. After the mid-point of a course, encourage peer-facilitated discussion and collaborative projects. Even the lowest stage of learner will benefit from activities that progressively introduce the next stage of self-direction. Peer interaction will provide modeling of higher stages and motivation for a learner to move to the next stage.

Summary

While webcentric distance learning operates without face-to-face communication, it can be structured to encourage even those at the earliest stages of self-direction to move to the next stage. Table 1 illustrates that, with planning, the webcentric distance learning environment can incorporate numerous strategies to provide growth opportunities for all levels of learner self-direction.

References

Brockett, R. G., & Hiemstra, R. (1991). *Self-direction in adult learning.* London: Routledge.

Burge, E. J., & Frewin, C. C. (1989). Self-directed learning in distance education. In C. J. Titmus (Ed.), *Lifelong education for adults: An international handbook.* England: Pergamon.

Grow, G. O. (1991). Teaching learners to be self-directed. *Adult Education Quarterly, (41)*, 3.

Keegan, D. (1986). *The foundations of distance education.* Australia: Croom, Helem.

Keller, J. M. (1995). *Motivation by design.* Author.

Moore, M. G., & Kearsley, G. (1996). *Distance education: A systems view.* Belmont, CA: Wadsworth.

Stipek, D. J. (1993). *Motivation to learn: From theory to practice.* Needham Heights, MA: Allyn & Bacon.

Verduin, J. R., & Clark, T. A. (1991). *Distance education: The foundations of effective practice.* San Francisco: Jossey-Bass.

Biographical Sketch

Rita-Marie Conrad is an Online Instructor for the Master's degree program in Instructional Systems Design with a major in Open and Distance Learning at Florida State University. In this role she is responsible for managing the delivery of web-based courses on topics such as online collaboration, learning theories, and the design of web-based instruction. Her research interests include student empowerment and ownership of learning in an online learning environment.

Address: 307E Stone Building
Tallahassee, FL 32306-4453
E-mail: rconrad@mailer.fsu.edu
Phone: (850) 644-8791
Fax: (850) 644-8776

Evolution Of Distance Delivery in a 10-University Consortium Providing a Nurse Practitioner Program

Betty Cragg
Director, School Of Nursing
University of Ottawa

Suzanne Doucette
Francophone Coordinator
Primary Health Care Nurse Practitioner Program
University of Ottawa

Program and Consortium Features

Overview

The Ontario Primary Health Care Nurse Practitioner Program (PHCNP) is a one-year post-baccalaureate certificate program offered by distance education in two languages through a consortium of the 10 universities in the province that offer nursing education. This provincial education program began in September 1995 in response to an initiative of the Ministry of Health to begin educating nurse practitioners in Ontario. The Ministry of Health provided the funding for the start-up and 5 years of the program in Canada's two official languages. Because of stipulations laid down by the Ministry, the program is a one calendar year post baccalaureate certificate that can be taken in combination with a post RN degree. It can be taken on a full-time or part-time basis. To be admitted, students must be experienced practitioners with a background in primary care or related fields in nursing.

When the Ministry offered funding for the program, the Council of Ontario University Programs in Nursing Deans and Directors decided that they would not compete with each other. To achieve maximum accessibility throughout the province but to contain teaching costs, a model was developed where each university admitted students to the program and distance education is used for all courses. Courses are taught once from one university to all the others. Tutors are hired and clinical placements arranged locally. Co-ordinators were hired to facilitate the implementation of the program, to co-ordinate activities and clinical placements, and implement distance education.

Providing the program through a consortium presents challenges in respecting university autonomy, co-ordinating clinical placements and preparing professors and students for a new learning environment. Among the challenges has been the monitoring and revision of a provincially developed curriculum by university based professors. The jurisdictions of the COUPN curriculum committee and the individual schools of nursing in such matters have had to be worked out. Ownership of course materials also raises potential problems as we look at marketing the program. The challenges have been offset with the development of dynamic partnerships and interchanges of professional networks, educational strategies and research initiatives, and a collegial and professional support network for students.

Students live in urban, rural and remote areas across the province and participate in one standardized curriculum, regardless of the university in which they are registered. Pooling provincial expertise, each of the five courses in the program has been developed by a different university, which takes the lead for delivering it to all ten sites. One professor is responsible for each course throughout the province, aided by on-campus tutors and NP and physician preceptors for the clinical courses. In addition, two of the 10 sites have developed equivalent courses and offer the program in French.

Evolution of Distance Delivery

In 1995 - 96, when the program began, the co-ordinators and professors placed great reliance on existing technology with which they were familiar. There are a number of networks for transmission of audio and video teleconferencing within the province and the program was able to access these facilities. In the first year of the program, the program in English relied heavily on audio teleconferencing, with back up of print based materials, some use of e-mail and a CD ROM was developed for the Pathophysiology course. The francophones used video teleconferencing more extensively than the anglophones did. Computer conferences were used in the anglophone program in the first year of the program through Telnet for course instruction in two courses by means of asynchronous student/faculty communication. However, there was no requirement that students have access to a computer.

Partnerships were developed with Contact North and College Boréal (who have distance networks for access from remote areas) for course delivery to remote areas. Ongoing collaboration continues with hospitals, community colleges and schools in order to access available audio and video equipment for distance delivery. Video conferencing is difficult in the anglophone program because the logistics of ten sites is aggravated by the lack of compatibility of video equipment and the exorbitant cost. Students also access their university for face-to face clinical labs.

There were a number of problems with the methods chosen. Real-time, synchronous teleconference transmission meant that students had to be available at particular times and places. Since the vast majority of students are multiple role women with jobs and families, many of whom live at a distance from their home university, getting to class was problematic. Technological breakdown was also a frequent source of frustration for both students and faculty. Because more traditional means of delivery were not satisfying and were costly, the program has become increasingly reliant on computers and Web based technology.

From limited beginnings of using some e-mail and occasional computer discussions in the first year, the program has moved to heavy reliance on Web-based technology for course delivery, including synchronous and asynchronous discussion groups, posting learning materials on the Web for downloading, using bulletin board functions to keep everyone informed, establishing province wide links among nurse practitioners, and collecting data for various projects. By the second year, it was clear that students would have to have computer and Internet access to succeed in the program. By the third year, all francophone modules were placed on-line for learners to down load. Students are now required to have access to a computer with a certain configuration before they start courses.

There is an open Web page (http://www.village.ca/np) where information about the program, courses and admission requirements can be obtained. Each course has its own Web-page. Course materials and program information for students and faculty are password protected. This method of delivery facilitates access and flexibility as well as timely communication for everyone involved in the program across the province. The other technologies are still used, but have become peripheral supports to the Web based distance delivered program. This reliance on Internet technology came about gradually.

Introducing Students and Professors to the Web

It was clear that using computers and the Web for learning and teaching was a new experience for both learners and professors. The majority of learners and faculty are women in their late thirties and forties and have had little experience with computer technology. Learning how to use the technology for teaching and learning takes much energy and creates stress for teachers and learners, particularly when learning the technology is concurrent with the course. Two survey tools have been used in the NP Program to assess computer use and comfort. The first gained information about learner access to equipment, software and support. A second, conducted after the first term, obtained feedback from students about how long it look them to be comfortable using the NP Network, any difficulties they experienced, what was most helpful in connecting to the NP Network, and what was their worst frustration.

The first survey of students, in (August) 1996, with 133 respondents, indicated that most students had a computer at home; a small number had McIntosh computers. Most had not used the Internet and a only small number had computer assistance available to them. The second survey, in January 1997, with 74 respondents, indicated learners still had difficulty sending and reading attachments and that most students took up to 4 weeks of a 13 week course to navigate within the learning environment, with some taking 6 weeks or more. Despite the problems encountered by new users, it was decided to continue to rely heavily on Web-based technology. Once students and professors had mastered the technological requirements, they appreciated the convenience, the access to the Internet and hot-links, and the possibilities for asynchronous communication. Several commented that they had been forced to learn skills that would stand them in good stead for the rest of their professional lives.

However, strategies to make the learning of the technology easier were implemented. Students were informed as soon as they were accepted into the program that access to a computer was expected. Methods to help them get up to speed have included: face-to-face orientation sessions, a frequently asked questions section on-line, exercises in sending e-mail, attachments etc., computer support persons available at each university site, an e-mail address and telephone help to answer questions. In spite of these supports, in 1998, approximately 35 % of learners took 6 weeks to navigate well within a web-based learning environment. Further assessment of needs and development of tools and support methods is presently underway in a research project funded by the Office Of Learning Technologies of the Canadian Federal Government. We are developing a series of additional strategies, including a CD ROM that provides software upgrades and tutorials, to help new users become comfortable more rapidly.

Presently, in the NP Network, each course has a Web page, with the course plan. Internet sites related to the course content are hot linked for students to explore. Students have a lounge, where no faculty are present. Here students can chat and get to know each other, share resources and frustrations. Most students will not meet face to face during the program. On-line registration, central resource ordering, precourse testing, course evaluations and research questionnaires have also been developed. These technologies are supported by paper-based units, CD ROMs, and audio and video conferencing. In the Francophone section, the course material is also available to download.

Student Preferences for Distance Delivery Methods

Because students in the program have experience with many distance delivery methods, in 1997-98, student preferences for distance methods for learning specific course content was studied through funding from the Network of Ontario Distance Education (Node/Rédo). (Cragg et al. 1998, a & b). The Francophone retrospective study , through Rédo used qualitative methodology interviewing 15 participants (graduates, professors and tutors). The Anglophone study used both quantitative and qualitative methods to study student preferences.

The NODE study elicited student preferences based on type of content, learning style, and experiences with distance delivery technology before and during the program. The population for the quantitative study was the 125 students enrolled in one or all of the five courses in the Anglophone PHCNP program from September 1996 to August 1997. The students were given the opportunity to contribute written comments throughout the questionnaire. In addition, six randomly selected respondents were interviewed, using a semi-structured interview schedule.

Participants believed that no one delivery method was ideal for all distance education. They felt that a mix of delivery strategies was ideal. They did believe there should be a "fit" between course content and the choice of distance delivery method. Overall, the most highly rated delivery method was print-based materials, followed by CD ROM. The least chosen were audio-tapes (which had only been used as backup for missed teleconferences), and computer mediated conferencing.

It was clear that reliability and convenience were important factors in student choices. A book is familiar, portable and can be used at any time. Computer conferencing required mastery of a whole new set of skills, and since these students had experienced server shut-down at crucial times, might have been perceived as unreliable. However, in the follow-up interviews, the respondents were much more positive about their experience with the NP network. Anglophone students rated videoteleconferencing highly because they perceived it as most like face-to-face. However, they had not actually used it in the program or experienced some of the technical problems that led the francophone professors to move away from relying on it. For the delivery methods they had used, technological reliability was a bigger factor in students' preferences than their learning style. Students who were uncomfortable with one delivery method, often made modifications, eg. taping audioteleconferences, printing discussions, forming learning partnerships and groups.

The use of distance delivery methods in the Primary Health Care Nurse Practitioner Program continues to evolve. The program has had the luxury of access to many different types of delivery mode and professors have been able to make selections based not only on availability, but also on the basis of content, teaching/learning styles, and strategies for learning. It can be anticipated that as the technology becomes more reliable, less expensive and more sophisticated, that new methods will be used and familiar ones will be used in different ways.

Reference

Node URL : http://www.largnet.uwo.ca/~caucus/NODE/

Biographical Sketches

Suzanne Doucette manages the development and distance delivery of the French Ontario Primary Health Care Nurse Practitioner Educational Programme. In addition she coordinates the curriculum development for both the English and the French programmes. The programme has students enrolled at ten universities which are part of this The programme and course information are delivered by computer at a Web site called the "NP Network"in English and "Le Reseau IP." In addition, audio- and video-conferencing, electronic mail are used in program delivery. Computer conferencing is used for asynchronous learner/faculty and learner/learner communications. Synchronous communication "chat" between faculty and learner has been employed in one course. She has been involved in a qualitative research project examining how the integration of distance delivery methods influences satisfaction in achieving course outcomes " L'influence des méthodes pédagogiques de télé-enseignement. She is presently involved in a research project funded by the Office of Learning Technologies entitled "Technological Support and the Adult Learner."

Address: University of Ottawa
Faculty of Health Services
School of Nursing
451 Smyth Road (3026)
Ottawa, Ontario, Canada
K1H 8M5
E-mail: sdouc@village.ca
URL: http://www.village.ca/np
Phone: (613) 562-5800 Ext. 8445
Fax: (613) 562-5605

Betty Cragg, RN EdD is the Director of the School of Nursing and Associate Dean of Health Sciences at the University of Ottawa, a bilingual university in the capital city of Canada. Her research interests are in the area of distance education for nurses, the consequences of using different technologies for distance education and the socialization/resocialization of nurses in a distance environment.

Address: University of Ottawa
School of Nursing
451 Smyth Road (3027)
Ottawa, Ontario, Canada
K1H 8M5
E-mail: bcragg@uottawa.ca
URL: http://www.health.uottawa.ca/
Phone: (613) 562-5423
Fax: (613) 562-5438

Piloting the Psychosocial Model of Faculty Development: A Systems Approach to Promoting Technology Use for Distance Education

Patricia Cravener, EdD, RN, CS
Assistant Professor, Director of Distance Education
University of Texas at Arlington School of Nursing

As institutions of higher education begin offering courses of instruction online, faculty who are reluctant to use computer-mediated communication technologies are often the weakest element in what could be successful programs. Students taking distance courses from accredited universities too frequently encounter professors who make it clear that they know little about communications technologies and do not wish to spend time learning to use the technologies that support computer mediated communications. At most colleges and universities, faculty and staff in the Instructional Design, Educational Technology, and/or Information Technology services devote a substantial proportion of their time trying to encourage the faculty to use the most effective media for communicating with geographically remote learners. The most common outcome is that faculty either don't attend educational technology training programs or don't implement the new technology after programs end (Lee and Johnson, 1998). This paper presents a different model for faculty development programs and describes the outcomes of its first year of implementation in one department.

The Paradoxical Disjunction Model

The *Paradoxical Disjunction Model* (Figure 1) for faculty development programs is based on recognition of a fundamental systems-level discrepancy between psychosocial concerns of college and university faculty and the information/educational technology support services (ITS/ETS) approach to faculty development. Technology support personnel usually focus — as seems perfectly reasonable within institutions of higher education — on the adoption of technology to improve teaching, learning, and research tasks (Lee and Johnson, 1998). On the other side of the technology adoption pipe, however, the faculty are predominantly focused on psychosocial factors (Cravener, 1998a; Rickard, 1999). Faculty are already successful at teaching and research; subject-expert faculty have minimal incentive to alter their teaching practices by learning new high-tech skills. Few colleges reward use of technology, or even distance teaching, with tenure and promotion awards. In addition, both social status issues and affective responses to being confronted with new technology (anxiety, fear, conflict related to cognitive dissonance) inhibit faculty from participating in educational technology training and from implementing the technologies after training.

Maximizing Motivation

For many faculty, learning to use new technologies to support distance teaching and learning is a time-consuming undertaking for which no immediate gain is apparent. Since academic faculty represent the largest investment made by the university, it seems reasonable to plan faculty development programs that maximize faculty effectiveness by adapting to the

Paradoxical Disjunction Model of Faculty Development Projects

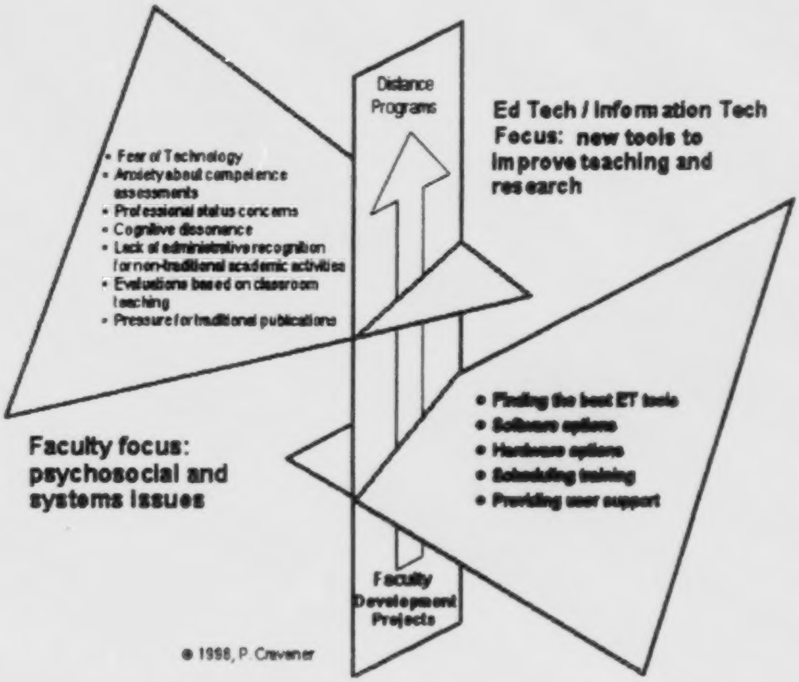

Distance Programs
Ed Tech / Information Tech Focus: new tools to improve teaching and research
• Fear of Technology
• Anxiety about competence assessments
• Professional status concerns
• Cognitive dissonance
• Lack of administrative recognition for non-traditional academic activities
• Evaluations based on classroom teaching
• Pressure for traditional publications
• Finding the best ET tools
• Software options
• Hardware options
• Scheduling training
• Providing user support
Faculty focus: psychosocial and systems issues
Faculty Development Projects
© 1998, P. Cravener

Figure 1. The Paradoxical Disjunction Model shows differences between the focus of technology support personnel and actual concerns of faculty related to the adoption of new technologies for distance education.

workload, psychological, and social needs of faculty. One way to minimize risk and maximize gain for faculty members is to provide just-in-time technology training. When the professor has identified a need or a desire to use a specific technology, his/her motivation to acquire and continue to use the new knowledge and skills is maximized. Providing technology consultation to the faculty in the privacy of their own offices is a cost-effective strategy for increasing faculty use of educational technologies to support effective interactive teaching/ learning activities. Faculty's efficient use of time is maximized and social status concerns are minimized by having training sessions in their own offices instead of a public central location. When faculty members learns on the same equipment that will be used for daily work, generalization of training to performance domains is maximized.

Investing in faculty trainers. The most appropriate provider of 1:1 faculty instruction will vary according to the complexity of the teaching task, including the extent to which the training provider will have a role in helping to plan best-practice uses of the technology. The more complex the technology adoption challenge, and the more closely the provider will work with faculty on instructional design issues, the more knowledgeable the provider must be concerning basic principles of adult education.

> Knowing how educational technologies operate is not adequate preparation to work with . . . the faculty . . . nor is it sufficient preparation for the tasks of assisting instructors in developing entire courses, providing input into technology acquisition decisions that impact teaching and learning throughout an institution, or negotiating among stakeholders at the upper levels of higher education administration or corporate environments on behalf of adults learning in technologically-mediated environments. (Collins, 1999, p. 10)

Collins (1999) suggests that the educational technology support personnel should receive further education in basic adult education theory and practice. Another strategy is to select, as trainers, faculty who have technological expertise and who are already experts in the area of adult education. Using faculty peers as trainers has further potential advantages, including increasing faculty motivation through the referent, expert, or information power of the provider (Cravener, 1998a). Is such an expensive solution — employing faculty to provide educational technology training for their peers — cost-effective? The outcomes of the first year of implementing the psychosocial model in one department indicate that it is.

Case Study

The psychosocial model of faculty development was applied for one academic year in one department within a medium-sized Doctoral II university. The major goal for the intra-departmental faculty development program (FDP) was to improve faculty members' skills with use of information and communication technologies, as part of a strategic plan to implement a distance education program. Following the structure defined in the *Psychosocial Systems Checklist for Planning Faculty/Staff Development Programs* (Cravener, 1998b), faculty were coached to help them acquire concepts and skills that improved their ability to manage course-related, computer-mediated communications with students. In accord with needs assessment survey findings, emphasis was on just-in-time educational technology training for faculty provided by a colleague, 1:1, in faculty offices. The FDP provider proactively sought consultation opportunities. The focus was on teaching faculty to be more competent with programs they were already using (Netscape, Microsoft Word) and learning basic concepts related to the Internet, World Wide Web, and file transfers. Most consultation time was scheduled by appointment, but casual and drop-in requests were also encouraged. Brief consultations provided quick solutions to immediate "how-to" problems. In addition, the FDP provider "brokered" some requests for instruction. For example, 1:1 consultation with the campus librarian was arranged for a new faculty member who wanted to know how to access journals online.

FDP costs. Cost to the department was 4 work units of faculty time for each semester, in a department where the average work load is 12 units (range 9 — 16), replacing one 6-hour off-campus clinical instruction assignment. The reassignment of duties necessitated hiring a part-time adjunct instructor for one semester at a total cost of $3,000. No other direct expenses were incurred. Participating faculty incorporated ET/IT learning time into their regular work week, a process that was facilitated by flexible availability of the training provider in accommodating 1:1

appointment times to faculty schedules. No additional software licenses were needed and no new hardware was purchased for the FDP.

Psychosocial considerations. The FDP provider was a person recognized within the department as an expert user of computer applications for teaching and learning, with special emphasis on distance learning paradigms. This competence provided a credibility factor that, overall, encouraged consultation. Further, the FDP provider was widely perceived as having friendly, collegial relationships with faculty in the department. Nevertheless, two classes of FDP resistance phenomena were observed. First, several senior faculty members declined participation, sometimes saying that they "couldn't understand a word she says," a response cited by Sherry (1998) as common among faculty whose lack of experience with new technologies leads to a lack of self-confidence and a preference to avoid public learning risks. It seems possible that a longer trial of the program might permit development of improved trust levels.

The second resistance area indicated both systems and affective issues, noted among faculty whose roles in the department were most similar to the provider's. High similarity of social status combined with disparity in technology use skills probably aroused anxiety and cognitive dissonance related to interpersonal competency comparisons (Cravener, 1998a; 1999). Although approximately 10% of faculty held very similar positions to the FDP provider (instructional members of the same course group or having identical pre-tenure status) only 5% of logged faculty consultation time for the FDP was with persons in the high-similarity interpersonal comparisons group. 95% of logged FDP consultation hours were utilized by 42% of faculty in low-similarity interpersonal comparison groups: tenured faculty whose rank exceeded that of the FDP provider, or faculty who taught in separate course groups.

Outcomes of the FDP. Faculty time commitments with their regularly assigned duties continued to be a factor that limited participation. Several people expressed an interest in acquiring specific new skills, but did not feel justified in adding to their existing workload to do so. There was no direct acknowledgment or reward from administration for faculty who chose to spend extra time improving their ability to use information and communication technologies, which further decreased motivation to participate in the FDP. In total, 32% of the 47 faculty members who had access to the FDP participated in 1:1 consultation. Outcomes for participants included a) the creation and independent maintenance, by faculty, of several simple Web pages that publicized educational programs and served as learning resources for students, in a department where previously there were no course Web pages; b) improved faculty satisfaction with their ability to use email and other Internet resources effectively; and c) increases in frequency of email communications between students and faculty. During the second semester of the FDP, the 1:1 in-office training format was also adopted by university librarians, a strategy change that was based, at least in part, on the model that served as the basis for this FDP.

Conclusion

The psychosocial systems model described by the *Paradoxical Disjunction Model* (Figure 1) and the *Psychosocial Systems Checklist* (Cravener, 1998b) could be adopted by any college to improve the results of faculty development programs. Potential outcomes are increased faculty comfort with use of technology. Leading to improved effectiveness of online teaching. Critical factors for faculty development programs include assurance of administrative support and recognition, application of principles of adult learning, and positive resolution of affective issues. Some psychosocial status concerns can be alleviated through offering private training in faculty offices. Resistance to technology adoption associated with time constraints can be partially overcome by scheduling just-in-time sessions, on demand, at times most convenient for individual faculty members. Faculty responses to this program indicate that optimal participation rates might be achieved by offering faculty development services through a team approach. It is recommended that an ideal FDP would include access to faculty providers from other departments, so that any individual who was reluctant to seek tutoring from a close associate could easily contact an expert from another department for 1:1 consultation. Observations this year indicate that an interdepartmental program based on reciprocity among FDP faculty peer providers may be the most cost-effective way to maximize ET/IT adoption among faculty and increase faculty use of online technologies for successful Web-based teaching and learning.

References

Collins, M.. (1999). I know my instructional technologies: It's these learners that perplex me! *The American Journal of Distance Education*, *13*(1), 8-23.

Cravener, P. (1998a). Faculty development programs. In M. Collins (Ed.) *Proceedings of the NAU web.98 Conference*. Flagstaff, AZ: Northern Arizona University. [Online]. Available: http://star.ucc.nau.edu/~nauweb98/papers/cravener/cravener.html

Cravener, P. (1998b). *Psychosocial Systems Checklist for Planning Faculty/Staff Development Programs*. [Online]. Available: URL: http://www.cravener.net/staffdev.htm

Cravener, P. (1999). Individual anxiety and institutional decision-making. *ONLINE-ED*, No. 87. [online]. Available: URL: http://www.edfac.unimelb.edu.au/online-ed/

Lee, J. R., & Johnson, C. (1998). Helping higher education faculty clear instructional technology hurdles. *Educational Technology Review*, 10, 13-17.

Rickard, W. (1999). Technology, education, and the changing nature of resistance. *Educom Review*, 34(1), 42-45.

Sherry, L. (1998). An integrated technology adoption and diffusion model. *International Journal of Educational Telecommunications*, *4*(2/3), 113-145.

Biographical Sketch

Patricia Cravener is Assistant Professor and Director of Distance Education in the School of Nursing at the University of Texas at Arlington. Her research interests include the interactions between psychological traits and use of distance teaching—learning technologies in higher, adult, and continuing professional education.

Address: UTA Box 19407
Arlington, TX 76019-0407
Email: cravener@cravener.net
URL: http://www.cravener.net
Phone: (817) 272-2776
FAX: (817) 272-5006

Academic Program Management
A Crucial Component in Maximising Flexibility in Online Tertiary Education Programs: A Case Study

Peter N. Cronk
Department of Further Education and Training
University of Southern Queensland
Toowoomba, Australia 4350

Emory McLendon
Department of Further Education and Training
University of Southern Queensland
Toowoomba, Australia 4350

Note: The conference session to which this summary paper relates will be conducted primarily as a discussion group. It is intended to use issues raised from our experiences at the University of Southern Queensland to stimulate that discussion. The content of this summary paper is intended to firstly, provide background information to contextualize that discussion and secondly, to provide an indication of the intended approach in the session to issues raised. The issues presented here are intended only as examples of the type of issues to be discussed in this session. Others will be added by both the presenter and the participants.

Background

The University of Southern Queensland (USQ) in Toowoomba, Australia commenced its involvement in distance education in 1977. Currently more than two-thirds of its 21,000 students are studying in accredited degree programs (both undergraduate and graduate) offered by distance education. USQ's leadership, in the area of distance education, is recognised both nationally and internationally. The university has been awarded the International Council for Open and Distance Learning's 1999 Prize of Excellence for its global initiatives and expertise in providing flexible learning opportunities to the world market.

Prior to 1996, the university's distance education degree programs were delivered almost exclusively via print using audio-visual, CMC and teletutorial support. In recent years the university has moved increasingly to online delivery for its degree programs. Since 1996 the department of Further Education and Training has taught and managed a series of Graduate Certificate and Masters degree programs exclusively via the World Wide Web.

Generations of Distance Education at USQ

The evolution of distance education delivery at USQ is central to the content of this session. Taylor (1996) in describing the evolution of distance education delivery outlines four generations of delivery technologies along with his perceptions of the corresponding characteristics of each.

These generations of delivery closely mirror developments at USQ. Taylor's four generations of distance education delivery are outlined in Table 1.

Table 1. Models of Distance Education: A Conceptual Framework

Models of Distance Education and Associated Delivery Technologies	Characteristics of Delivery Technologies				
	Flexibility			Highly Refined Materials	Advanced Interactive Delivery
	Time	Place	Pace		
First Generation - The Correspondence Model					
• Print	Yes	Yes	Yes	Yes	No
Second Generation - The Multi-media Model					
• Print	Yes	Yes	Yes	Yes	No
• Audiotape	Yes	Yes	Yes	Yes	No
• Videotape	Yes	Yes	Yes	Yes	No
• Computer-based learning (e.g. CML/CAL)	Yes	Yes	Yes	Yes	Yes
• Interactive video (disk and tape)	Yes	Yes	Yes	Yes	Yes
Third Generation - The Telelearning Model					
• Audio teleconferencing	No	No	No	No	Yes
• Videoconferencing	No	No	No	No	Yes
• Audiographic communication	No	No	No	Yes	Yes
• Broadcast TV/Radio + Audio teleconferencing	No	No	No	Yes	Yes
Fourth Generation - The Flexible Learning Model					
• Interactive multimedia (IMM)	Yes	Yes	Yes	Yes	Yes
• Internet-based access to WWW resources	Yes	Yes	Yes	Yes	Yes
• Computer mediated communication	Yes	Yes	Yes	No	Yes

For the purpose of this session and without debating the validity of Taylor's claims regarding the characteristics of the various delivery technologies, there are several issues, which need to be raised in examining Taylor's arguments.

Delivery Technologies – Not the Only Consideration

Central to the argument of this session is Taylor's claim that as distance education moves towards later generations of delivery the primary benefits for learners are flexibility of access and increased student control over their learning. "In effect, these 'flexible access' (1992) technologies have the potential to allow the student to access learning at will, as lifestyle permits . . . Such flexibility has a major pedagogical benefit - it allows students to progress at their own pace. Thus varying rates of individual progression can be accommodated, unlike typical conventional education practices . . . " (Taylor, 1996:3).

The framework outlined in Table 1, while potentially a valid framework for the purpose of describing the inherent characteristics of distance education delivery technologies, focuses only on that particular aspect of implementing distance education programs in tertiary institutions. What the framework in Table 1 does not consider (nor makes any claim to do so) are contextual issues, other than available delivery technologies, which impact on the effectiveness and efficiency of distance education programs, irrespective of the delivery model utilised.

For example, Gellman-Danley and Fetzner (1998) and Berge (1998) identify and discuss a range of contextual issues arising from teaching online programs. These authors conclude that when examining the impact of the growing move to online university education there is a crucial need to examine the full spectrum of issues such as academic, governance, technical, cultural, legal, labour-management and fiscal practises, in addition to questions of technology.
Moore (1994) claims "...the barriers impeding the development of distance education are not technological, nor even pedagogical. We have plenty of technology, and we have a fair knowledge about how to use it. The major problems are associated with the organizational change, change of faculty roles, and change in administrative structures. Here we desperately need all the ideas and all the leadership than can be assembled. The starting point is to expose the problems".

Surprisingly little appears to have been written about the academic management and administration of programs utilising what Taylor (1996) labels as fourth generation distance education delivery.

Issues Emerging from the USQ Experience

It is clear from the USQ experience that as each delivery generation evolves, teaching staff are required to change the way they conceptualise tertiary teaching and learning, to adapt and extend their repertoire of instructional strategies/techniques, and to develop the technical skills necessary to maximise potential teaching/learning benefits offered by the new delivery technologies. Our experience suggests that in the same way, the current concerted move towards online delivery of educational programs generates tensions, which seriously challenge the existing systems for academic program management and student learning support. Resolving these tensions is equally important if the potential benefits of evolving online delivery technologies are to be maximised. Academic managers must look 'outside the square' to develop more student-centred, rather than institution-centred policies for the administration of academic programs. There is, almost by definition, an irresistible demand to develop 'fourth generation' academic program management policies and procedures to complement the potential of fourth, and subsequent, generation delivery technologies.

Our experiences suggest that the claimed potential of online delivery technologies, to increase flexibility of access and increase student control of their learning, cannot be fully realised unless developments in delivery technology are accompanied by parallel developments in institutional functions such as:

- roles, technical skills and instructional techniques of teaching staff;
- design of instructional and learning support materials;
- student support mechanisms;
- program management policies and practices in areas such as selection, enrolment, assessment, progression, etc., especially as online delivery via the World Wide Web means the potential student market for any institution is dispersed worldwide.

Practical Examples of Challenges to Established Academic Management Policies and Practices–for Discussion

On the basis of our experience in offering graduate programs online at USQ over the past thirty months we have identified a sample of academic program management issues to illustrate that an increasingly flexible learning environment, using online delivery technologies, raises major challenges to the established practices and policies for the management of academic programs and teaching/learning at USQ , and we suspect, many universities.

For each issue, while acknowledging that the issues raised are often more complex than may be displayed in these brief descriptions, the session will:

- Briefly outline existing USQ policy and procedures
- Outline and discuss the challenges generated by online delivery
- Suggest and discuss possible directions as to how management policies and procedures might be changed to maximise the benefits of developments in online delivery.

Monitoring Student Entry Requirements

Established USQ practice: Formal entry requirements are set for all degree programs. Applicants are required to establish through hardcopy documentation that they meet entry requirements before (a) they are enrolled in a degree and (b) are allowed access to study materials.

Online challenge: Applicants enroll online claiming to satisfy entry requirements for the selected degree. Individual applicants have limited access of providing authenticated documentation online. With applicants potentially worldwide, submission of hardcopy evidence may take months.

Possible USQ solutions: (a) Students enroll online with acceptance into a 'holding' non-award program with full access to study materials provisional until the university receives and assesses hard copy documentation of the applicant's credentials to facilitate transfer to the desired degree program. (b) Degree requirements are rewritten to emphasise outcomes as the criteria for student progression and eventual graduation. This shifts the major focus from selection at entry and the emphasis on production of hardcopy documentation of the applicant's credentials before confirming enrolment and ongoing access to study materials. The focus now is more on students demonstrating ability to meet academic progression and completion criteria with minimal demands for substantiation of claimed entry pre-requisites.

Student Enrolment Periods

Established USQ practice: Degree enrolment periods correspond to established semester timelines. Thus, students can enroll in a degree at the start of any of three established semesters (February, July, and November). Students submit applications well in advance of the start of semester, but often do not receive notice of acceptance for several weeks. Study materials are available only at the start of each semester.

Online challenge: Applicants have year-round access to online enrolment into degrees with university acceptance potentially able to be given within a one working day. Student motivation to begin study is enhanced by this immediacy of the online enrolment process and knowledge that study materials are readily available. However, if students are required to wait until the start of a new semester to fully access study materials, there is the potential to generate frustration and the possible loss of the student to competing providers.

Potential USQ solutions: (1) Maintain the set enrolment periods per year. Allow online students to enroll in their degree at any time and provide limited access (a 'taster') to study materials on enrolment. Students officially commence study, gain full access to study materials and complete assessment items only in the next full semester of offering. (2) Online degrees have either (a) continuous enrolments with students permitted to commence study as soon as they are accepted into their selected degree or (b) more frequent set enrolment periods, e.g. six times a year or perhaps monthly with full access to study materials at the start of the next minimally delayed enrolment period.

Student Progression

Established USQ practice: In line with set semester timelines, students who complete a unit of study (course or subject) in a time less than or longer than the set semester of fourteen weeks, must wait until the start of the subsequent semester before commencing study in their next unit. Additionally, not all units of study are taught in all semesters and many have prerequisite units, often within quite structured degree study sequences. As well, grades for units are recorded on university records only at the end of each semester, which impacts, on when students are able to demonstrate official completion of prerequisites.

Online challenge: With materials are technically available online at all times and with students able to manage their own study schedules, they tend to complete units of study at times other than the normal end of semester. Such students often wish to have their grade registered and commence study of their next course as soon as possible, especially if the next course enables them to build immediately on work done in the course of study just completed. Requiring students to wait weeks or even a full semester (because of patterns of course offerings or pre-requisite requirements) before accessing their next course of choice detracts from the student's educational experience and satisfaction with provider service.

Potential USQ solutions: (1) Maintain the current set enrolment and course completion timelines, but increase the frequency of offering courses and reduce prerequisite requirements as much as academically defensible. (2) With online programs, have more frequent course enrolment times, register grades immediately the student completes a course, offer all courses at all times and reduce prerequisites where ever possible. Thus, facilitating increased student freedom to self-structure the sequence and timing of their programs of study.

Nature of Study Materials

Established USQ practice: Essentially, many distance education materials are primarily print reproductions of face-to-face lectures and tutorials and utilize instructional techniques appropriate to face-to-face or print-based delivery. These materials are often written around a prescribed text with additional, copyright-cleared readings provided.

Online challenge: To change the view of some staff and administrators that online delivery is simply using computers to replicate face-to-face teaching, or that it is a mechanism for scrolling pages of print-based study materials or it is a way of simply transferring the costs of printing study materials to the student. The challenge is to facilitate the development and acceptance of instructional approaches, which capitalize on the unique potential of the web as a vehicle for core materials delivery, information retrieval and processing, and sometimes quite intimate group interaction while maintaining academic integrity and quality of content and learning outcomes.

Potential USQ solutions: (1) Reproduce print-based study materials online and snail mail selected readings and locally non-available texts to students. When copyright clearance for online delivery is forthcoming, some selected readings are put online or made available to students through an online library storage and retrieval system. (2) Significantly reduce the reliance on copious teacher generated study materials, prescribed texts and selected readings and teacher control of 'class' interaction. Develop study materials and teaching approaches that are focused on facilitating student achievement of stated learning outcomes with reduced core informational material provided by teaching staff and reduced reliance on set texts. Guidance on how to access, utilise and share non-institutionally based web materials would be provided through online discussion groups, announcements, real-time audio, video and email enabling students to use locally available resources, which address the same content as previously prescribed text and readings materials. This also affords students an opportunity to contextualise content in their particular cultures and work environments while still achieving common learning outcomes.

Approaches to Student Assessment

Established USQ practice: Approximately 75% of USQ distance education units continue to employ formal, set date examinations as a major component of student assessment. A central division of the university manages these examinations and is responsible for organising the scheduling, distribution and supervision of the examinations for students studying in the distance mode.

Online challenge: With the increasing flexibility afforded by online offerings, students are able to commence and complete units of study outside set semester timeliness. The challenge is to develop forms of student assessment which compliment this flexibility and that are both educationally appropriate and economically viable on a worldwide basis.

Potential USQ solutions: (1) Continue to use formal examinations in those units that choose to do so. Offer a formal examination in each unit of study, in each semester examination period, irrespective of the semester(s) in which the course is taught. Students nominate to sit examinations in the semester of their choice. While this option may be educationally defensible there remain questions as to its logistic and economic viability with large numbers of distance education units and students spread worldwide. (2) Employ alternative forms of student assessment that are more online friendly and support increased student control over learning e.g. various forms of online examination, projects, papers, multi media presentations, etc. While there are a range of considerations including technical issues, security and costs considerations, the overriding criteria for online assessment must be the maintenance of academic quality and integrity while utilising the potential of the technology.

Conclusion

In a nutshell, this session will seek to have participants explore some of the problems (and opportunities) that traditional academic administrative structures pose for the new delivery technologies (or vice versa).

Our experiences at USQ suggest that if flexibility and student control over their learning are taken seriously then tertiary institutions must devote as much resource to the review and development of academic management strategies, including student support systems and professional development of teachers, as are focused on the development of delivery technologies. The claimed potential of online delivery technologies to increase flexibility of access and increase student control of their learning cannot be fully realised unless developments in delivery technologies are accompanied by parallel developments in institutional functions such as those identified in this session. To do otherwise, will almost certainly result in fourth generation delivery technologies being managed with policies and procedures designed to manage first, second and third generation delivery.

Discussion in this summary paper represents a limited selection of academic management issues which online delivery experience at USQ has highlighted. It is anticipated that other, possibly quite different issues and possible actions will be raised in the discussions of this session.

With each issue raised in this summary paper, we would claim that the first listed potential USQ solution is indicative of institutional attempts to accommodate the online challenge with minimal disruption to existing academic program management policy and procedures. Collectively, actions such as those identified as the second possible solution represent a direct challenge to the established academic management paradigm in many tertiary institutions. To adopt these or similar solutions often would necessarily require a radical shift to fourth generation management policies and procedures.

It is interesting to note that the current Vice-Chancellor of the Open University in the United Kingdom, in discussing the ways in which universities can respond to the opportunities presented by new technologies, reinforces the importance of academic policies and procedures appropriate to online delivery. Daniel (1999:5) in discussing this issue makes the following distinction between hard and soft technologies. "Hard technologies are bits and bytes, electrons and pixels, satellites and search engines. Soft technologies are processes, approaches, sets of rules and models of organisations". He then concludes, ". . . that if you want to use the hard technologies for university teaching and learning (in a way) that is both intellectually powerful and competitively cost effective you must concentrate on getting the soft technologies right".

References

Berge, Z. L. (1998). Barriers to online teaching in post-secondary institutions: Can policy changes fix it? *Journal of Distance Learning Administration, 1*(2). [Online] http://www.westga.edu/~distance/Berge12.html

Daniel, J. (1999, March). *Distance learning in the era of networks: What are the key technologies?* Paper presented at the Pan Commonwealth Forum on Open Learning, Brunei.

Gellman-Danley, B., & Fetzner, M. J. (1998). Asking the really tough questions: Policy issues for distance learning. *Journal of Distance Learning Administration, 1*(1). [Online] http://www.westga.edu/~distance/danley11.html

Moore, M. G. (1994). Administrative barriers to adoption of distance education. *The American Journal of Distance Education, 8*(3).

Taylor, J. C. (1996). *Perspectives on the educational uses of technology.* Report for the International Council for Distance Education Standing Conference of Presidents. Lillehammer, Norway: Task Force on Educational Technologies.

Biographical Sketches

Peter Cronk has been the Head, Department of Further Education and Training at USQ for the past four years. During that time he has overseen the development of the Department's online graduate programs. He has now assumed a co-ordinating role with those programs. He was for eight years as a primary teacher and administrator in Queensland and Canada. Over the past twenty years he have been involved in tertiary teaching, research and consultancy in Australia, Canada, England, Papua New Guinea and China. His teaching and research interests centre on the development and evaluation of flexible delivery education / training programs at the post-compulsory level of education and industry training, and on the use of the workplace as a site of learning. In 1997-99 Peter led a federally-funded project to design and implement professional development programs via flexible delivery, for teachers in the post-compulsory education sector in Eastern Cape Province, South Africa.

Address: Department of Further Education and Training
University of Southern Queensland
Toowoomba, Queensland 4350
Australia
E-mail: cronkp@usq.edu.au
URL: http://www.usq.edu.au/faculty/educate/fet/
Phone: +61 7 46 312329
Fax: +61 7 46 312828

Emory McLendon has recently assumed the position of Head, Department of Further Education and Training at USQ after being a course co-ordinator in the department for four years. He has a background in education and business with twelve years secondary classroom teaching in USA, two years technical college teaching and, just prior to joining the University of Southern Queensland in 1994, he worked with Australia's largest food retailer in training and quality management. His teaching and research interests are in management strategies, leadership development and instructional practices. Emory is active on the local committee of the Australian Institute of Management and with the National Tertiary Education Union.

Address: Department of Further Education and Training
University of Southern Queensland
Toowoomba, Queensland 4350
Australia
E-mail: mclendon@usq.edu.au
URL: http://www.usq.edu.au/faculty/educate/fet/
Phone: +61 7 46 312825
Fax: +61 7 46 312828

Using Distance Learning to Teach at a Distance: How to Survive and Thrive in a Satellite Teleconference

Bob Crook, Director of Satellite and Studio Services
LeCroy Center–Dallas County Community College District

Thomas (Tom) Cyrs, Ed.D, Educational Development Associates
Las Cruces, New Mexico

"Behind the Scenes" of a Satellite Teleconference

In February, 1998, the DALLAS Teleconferences unit of DALLAS TeleLearning committed to producing a live, satellite teleconference featuring Tom Cyrs on October 29 of that year. Cyrs would use a workshop format to demonstrate how to teach at a distance. The producer had participated in one of Cyrs' workshops at the Conference on Distance Teaching & Learning in Madison, WI in the early 1990's, but he determined that experiencing a more current workshop would be essential for designing an effective teleconference. He attended an abbreviated workshop featuring Cyrs and his colleague Jean Conway in Austin, TX in April, 1998 and a two-day conference on "Creative Teaching at a Distance with the Merging Technologies" with Cyrs and Conway in Albuquerque, NM in May, 1998. The creative problem to be solved was to select appropriate excerpts of the May workshop to televise and to decide how best to use the television medium to communicate Cyrs' methods and information. It would also be imperative that the teleconference be interactive, with participants doing some learning activities, not just seeing and hearing about them.

Three Levels of Production Quality

In most television production projects, the fundamental decision is the level of quality to try to achieve. In instructional television, there are three broad categories: professional broadcast quality as found on PBS, you-get-what-you-see talking heads, or a modified production level that is a compromise between the professional and Y-G-W-Y-S levels.

Since the PBS Adult Learning Service would be marketing this teleconference as part of a series of three uplinks from DALLAS Teleconferences, and since this unit of DALLAS TeleLearning derives its income from the site licenses paid by colleges and universities across the country, the mission from the beginning was achieving a professional broadcast level while maintaining the instructional integrity of the instructor's workshop. This program would require the same level of quality as other teleconferences presented by PBS, which meant it would require a highly-skilled studio crew, a moderator experienced in live broadcasts, pre-produced video segments, well-designed graphics, and a lively, engaging and well-paced treatment of the material.

Planning and Organization Required

The producer and instructor worked off and on throughout the summer communicating by telephone, FAX and e-mail. Planning the television production and the development of the participant's print guide were executed simultaneously, using a telelesson plan and interactive study guide, or ISG, which are vital components of the instructor's approach to distance teaching and learning. The print component, therefore, was far more involved than any the producer had used previously. As with any live, satellite production from the broadcast studio of the LeCroy Center for Educational Telecommunications, the producer, with the help of assistant producer Marilyn Herridge, contracted with the director and studio crew selected from freelance professionals in the Dallas area, coordinated satellite times with the technical staff at PBS, hired a moderator who had many years of live television experience, arranged for tables, chairs and other pieces for the studio set, purchased special television-aspect-ratio flip charts and markers, and booked special assistants such as PowerPoint operator who would operate a lap-top computer in the studio and a production assistant to turn the flip chart pages. The producer also oversaw the taping and editing of segments on good and bad teaching on live television and on engaging and boring presentations of online courses to use as video roll-ins.

Making the Teleconference an Effective Teaching Event

In presenting the instructor as a "teacher of teachers" who models the teaching, the producer and instructor agreed to focus on four objectives as they distilled the day-and-a half workshop the instructor had co-led in Albuquerque down to 90 minutes for the broadcast. Also, the producer had never before designed a teleconference around a companion print element that was integrated with the video and which required real-time audience participation. Since the intent of the teleconference was to use television and print to provide key elements of the instructor' workshop to a national audience, and the use of the telelesson plan and ISG were required.

Early in the summer, the instructor sent the producer an ISG with three elements. The top half of the page contained the information the instructor would present; the left part of the lower half was labeled "TV Screen" and contained graphics or rough drawings of what the audience would be seeing as he presented the information above; the right part of the lower half showed what the audience would see in their version of the ISG. The ISG for the audience contained fill-in-the-blank exercises, spaces for short-answer questions for drawing and sketching. the producer and instructor worked together to determine what elements would be used on television: shots of the instructor teaching, information on flip charts, on PowerPoint, and from the electronic character generator in the studio control room, shots of the live audience who would participate in the studio, and pre-produced video segments to illustrate key points.

Another key element of the production that was included to enhance instructional effectiveness was a live studio audience. From having observed the instructor twice in recent months, the producer knew that the instructor drew energy from the audience of his workshops, and using television to transmit that high level of intellectual and emotional energy to the audience at receive sites around the country would be a key to the program's success.

Different Points of View by Producer and Instructor

As is the case in all DALLAS Teleconferences, the producer wanted the production to have high-quality production values, to be error-free in execution, to be lively and engaging, and to generate plenty interactivity by telephone and FAX. With this project, the concern was that the workshop would translate well to television, that it would not drag, that the studio audience would add a level of spontaneity and give the presenter enough feedback so that he could play off of them, that the video roll-in pieces would accurately present the issues and would be perceived as good quality production, and that the producer, assistant producer and director could keep the PowerPoint, character generator, and flip chart elements coordinated, while overseeing the standard elements of all broadcasts, i.e., camera shots, switching, audio, inserting graphics, rolling in videotaped segments, etc.

As is the case with his workshops and training sessions, the instructor wanted the viewers to learn effectively from his message, methods and uses of media. Furthermore, he is designing this event to be experiential, with the audience in the studio and at the receive sites actively participating. The workshop must demonstrate how to teach higher levels of problem solving and critical thinking the only way people can learn these skills: through interaction (whether electronic or otherwise) between student and teacher.

Combining High Tech and Low Tech Elements

The high tech elements used in this satellite teleconference included the control room animation computer used to create the opening titles for the program, the standard complement of television production devices, such as a switcher, still store, and digital video effects, a telephone bridge to receive and hold calls from the audience, and studio components such as a through-the-lens teleprompter and a motorized lift for adjusting lights on the grid above the studio. Special equipment included a laptop computer for operating PowerPoint, separate wireless IFB's (earpieces) for the moderator and production assistant at the flipcharts as well as a wired IFB for the laptop operator, and a fourth camera that is usually stationary high on the wall opposite the set used as a hand-held camera.

The low tech elements included two flip charts with markers, the interactive study guide in the participant's print packet for the program, and a production assistant to write on the flip charts and to turn the pages quietly and at the right times so that the appropriate page was always ready for the instructor to use.

An example of intermingling high and low tech was the communications with the production assistant handling the flip charts. The assistant producer in the control room used a dedicated microphone to tell the production assistant, who was using a wireless IFB (earpiece), which page to have ready on both of the flip charts.

Production Factors

Special steps were taken to make instructor's workshop approach work well on television.

- At the suggestion of the instructor, the producer purchased flip charts that were in television aspect ratio (wider horizontally than vertically) from a sole vendor in Denver, CO.
- Also at the suggestion of the instructor, a blank page was left between each page of printed information on the flip chart. In order to make it easier to turn the pages, they were clipped with white plastic paper clips so they would not show up on camera.

- The instructor also suggested that a particular brand of markers be used so they would not bleed through the paper. Those markers were purchased and used.
- The font style for the PowerPoint elements and the flip charts were the same. The assistant producer created the information for the flip chart pages in PowerPoint and printed each page out on an overheard transparency. Each transparency was projected onto a flip chart page, traced and filled in by hand by a freelance graphics person.
- To keep track of which elements to have on screen, two methods were used, colored paper for script pages and a special design for the final production script. Elements that were on the flip charts were on yellow paper; those on PowerPoint were on pink. Also, assistant producer Marilyn Herridge devised a way to include the PowerPoint and flip chart information in the video (left) column opposite the narrative which Tom had written in the audio (right) column. This second method was especially valuable because the director was also the technical director and had to follow the script and switch the program simultaneously.
- Another special task for this teleconference was inserting numbers from the still store in the lower left-hand corner of the television picture to correspond with the appropriate pages of the interactive study guide, so the viewers could easily correlate the video and print elements. The assistant producer sat beside the director and told him which page number to have on the screen.
- Since the assistant producer was busy communicating with the director in the control room and the production assistant in the studio, an additional person was recruited to fulfill the assistant producer's usual responsibility of taking FAX questions from the machine in the control room to the floor director in the studio.
- The instructor had written a narrative to follow in leading the workshop, and that narrative was entered into the TelePrompter. At the rehearsal the afternoon before the uplink, the instructor had trouble being spontaneous while following the narrative closely and in knowing the source, computer or flip-chart, for the upcoming information. After a run-through, the producer suggested that we try another approach. In an impressive display of ingenuity and flexibility, the instructor worked with the TelePrompter operator and they converted the narrative to brief notes and cues, which he was able to follow without losing the intellectual and emotional energy essential to his workshops.
- The producer used the LeCroy Center's one-person "instructor studios" to videotape examples of what the instructor called "talking head, shiny ring, and hairy arm" teaching. The instructor personally illustrated them effectively in the in-person workshops. The initial plan was to use drawings in the interactive study guide, but it was decided that these teaching styles should be shown rather than described on paper.
- A program feature which markedly affected the pacing and the total time available for presentation of information was the instructor's insistence on allocating several segments in which the audience in the studio and at receive sites would do activities, in keeping with his commitment to teaching higher level learning skills. The electronic character generator was used to put a countdown clock on screen with background music, while a director took shots of the studio audience as they completed the activities.

Lessons Learned From the Teleconference Production

The producer learned that transforming an in-person workshop into a televised workshop requires deliberate planning, attention to a myriad of special details, and especially the goodwill and cooperation of the instructor. The instructor learned that quality programming does not happen in a vacuum. It requires collaborative teamwork to alleviate errors based on faculty assumptions. Together, they learned that using television effectively for distance learning requires teamwork, a high level of planning and organizing, good visualization techniques, frequent and honest communication among the key team members, adequate funding, and extra efforts by the producer and instructor to find approaches that work in terms of pedagogy and accepted television practices. Furthermore, working together they demonstrated that it was indeed possible to compromise nothing that had instructional value while producing a professional, broadcast-quality event.

Biographical Sketches

Bob Crook is Director of Satellite and Studio Services for the LeCroy Center for Educational Telecommunications of the Dallas County Community College District. He has more than twenty years experience as executive producer and producer of Dallas telecourses, a pioneer and leader in distance education in the U. S. and overseas. In addition, he has supervised live, televised courses. Currently, he is producer for Dallas Teleconferences. His productions have been honored as the outstanding teleconferences for 1996, 1997, and 1998 by the National University Telecommunications Network, or NUTN. Crook and Tom Cyrs collaborated in the production and uplinking of a satellite teleconference in October 1998. The program, which was created and marketed in conjunction with the PBS Adult Learning Service, was licensed by more than 200 colleges and universities in the U. S., plus institutions in Canada and Mexico.

Address: 9596 Walnut Street
Dallas, TX 75243
E-mail: bcrook@dcccd.edu
Phone: (972) 669-6532
Fax: (972) 669-6699

Tom Cyrs is president of Educational Development Associates. He is also Professor Emeritus and Senior Faculty Adviser for Teaching Emeritus at New Mexico State University in the Center for Educational Development. Cyrs has conducted seminars and workshops in teaching at a distance for colleges and universities throughout the United States and abroad. He also consults and researches in distance education with the U. S. military, government agencies, health care institutions, business and industry. He is the 1995 recipient of the Mildred B. and Charles A.Wedemeyer Award for outstanding contributions in the application of distance education in North America. He is co-author of *Teaching At A Distance With The Merging Technologies: An Instructional Systems Approach* and author of *Essential Skills For College Teaching: An Instructional Systems Approach*.

Address: 900 Conway Ave.
Las Cruces, NM 88005
E-mail: tcyrs@nmsu.edu
Phone: (505) 646-1019, 523-9565 (home)
Fax: (505) 646-1330

MOOs and the Web: Combining Technologies to Provide Academic Support Services to Remote Students

Barbara J. D'Angelo, Academic Program Support Librarian
Arizona State University West

Barry M. Maid, Ph.D., Professor, Department of Rhetoric and Writing
University of Arkansas, Little Rock

Introduction: Academic Support Services and Distance Education

As distance education programs have been implemented on campuses throughout the country, varying degrees of importance have been placed on providing academic support services to students not able to travel to campus. Often, distance learning is seen by administrators as a way to increase FTE, a laudable goal. However, at the same time the provision of support is overlooked and remote students are left to fend for themselves to locate services that are provided to traditional students. Not only does this result in inequitable levels of service (and, indeed, even in increased costs to remote students who must pay for services provided free on campus), it has also been recognized that academic support services are an important factor in student retention on the traditional campus. Some large virtual (or mega-) universities have recognized students' need for support; for example, the Open University in the U.K. assigns each student his or her own tutor responsible for giving personal feedback on assignments and being available by phone or email for assistance.

Over the last few years, libraries and tutoring services have begun to reach out to remote students by extending traditional services through the use of information technologies with services limited to those students enrolled in a particular institution. However, the global nature of information technologies allows institutions to broaden the scope and nature of provision of service as well as establish relationships with other institutions that allow for reaching more students. ArkMOO falls into this model. Though most distance learning models look to deliver courses to students who cannot attend traditional classes because of geographic or time constraints, distance technologies also provide valuable opportunities to offer student support services in new and different ways.

ArkMOO Background

Based at the University of Arkansas at Little Rock, ArkMOO was founded with the goal of using information technologies to provide real-time tutoring services to students at community colleges; hence providing a service that was not available at the colleges themselves. The library was added to provide additional services to students and instructors at the colleges; i.e., a specialized collection of resources and access to the professional help of a librarian. Services are provided both asynchronously through the use of a website and email and synchronously through the use of a MOO, a multi-user environment, object oriented. (D'Angelo & Maid, 1998)

Tutoring Services

In the original model, graduate students in the Technical and Expository Writing Program at the University of Arkansas at Little Rock provided peer tutorial services to community college students based on Writing Center methods. Community college students would email drafts of their papers to the Virtual Writing Center. The tutors would then email comments back and schedule a MOO meeting for a conference on the student's work. This model enables trained peer tutors to extend their services over distance and reach a constituency which was not otherwise being reached. (Jordan-Henley & Maid, 1995)

Library Collection, Tutorials and Reference Service

The ArkMOO collections of resources have developed into the most popular and most used aspect of the Library. The use of information technologies and the web has allowed resources to be organized and managed in a way that makes them readily accessible and easily retrieved. The collection provides both students and instructors with a method of locating and retrieving information that adds value in terms of ease of use, relevance, quality, and time savings and provides a virtual supplement to the physical library located on their campuses.

The Library's collection was developed with two main goals. A general and subject-specific collection was built of Internet-based resources to be available in the event they would be of use to students. The general philosophy behind the selection of resources for the general collection was that they be easy-to-use reference resources; for the subject collection that they be focused around topics that community college students would be likely to select for research papers and which could be used either in tandem with or as a supplement to class-specific resources.

These class-specific resources provide the foundation of the second goal for the collection. Sets of resources, individually tailored to meet student and instructor needs, were developed for specific class assignments. For example, one instructor requires students to compose a paper and presentation on Flannery O'Connor. Hence, a section of the collection for that class is dedicated to resources on her.

Another section of the ArkMOO library which was initiated in the Spring 1999 semester is a set of tutorials on basic information literacy skills: locating, retrieving, and evaluating information. Another tutorial on plagiarism and proper use and citation of sources was added at the request of one of the instructors. Others will be considered for addition in the future.

Reference service is available both synchronously through the MOO and asynchronously via email. Use of the asynchronous service increased during the Spring 1999 semester, the 3rd semester of the Library's existence. Students from the two community colleges involved in the project sent questions regarding their research projects for the semester as well as for oral presentations. Use of the synchronous service was non-existent and is under evaluation.

Plans for the Future

A tracking program has been implemented in order to measure use of the Library's resources. Although we only have statistics for a short period of time, some clear patterns are emerging about usage and we will continue to monitor the site closely to determine if new services or resources could be added. In addition, the statistics have given us some valuable information about usage of the site by those who are not its primary clientele and this data will be evaluated for patterns to determine if services can be expanded to include these other users on a regular basis.

In addition, plans are being considered to redesign the Library's website for greater ease of use and navigation. In the same vein, a new MOO interface that will allow for greater integration between synchronous and asynchronous services has been designed and will be evaluated and may be implemented in the near future. The new interface should allow students who are most comfortable working in graphical web-based environments to move more seamlessly to the synchronous world of the MOO.

In addition, discussions are under way regarding solutions to some of the main problems encountered in the two years of the Library's existence and three years of the tutoring service. Implementing a more seamless interface between the MOO and website will aid greatly in its ease of use and may relieve some of the issues surrounding training and support. We have discussed the potential of applying for additional funds through grant agencies in order to provide additional staff resources to be used for some of the routine coding and maintenance of the website as well as to assist the Director of the project with technical issues and implementation of additional services.

Other, more library-specific problems remain. Since ArkMOO is a project dedicated to providing services to colleges in Arkansas and the librarian is currently employed in Arizona, the issue of access to resources other than those publicly available through the Internet will continue. Complicating the problem is the fact that the community colleges currently involved with the project have not established remote access capabilities to their online catalog nor other databases and indexes. Further, Arkansas does not yet have a statewide library consortium or shared resources on which to call. The librarian has visited the libraries of the two colleges involved and is thus able to give students some guidance in what they will be able to find there. But overall, the strategy has been to refer students to the campus library if needed with the advise to consult with the librarian there. This strategy is inadequate. However, until issues revolving around the tension of local geography vs. the global nature of the Internet and information technologies, this will be a difficult issue to deal with. Indeed, what we are observing with the library part of the ArkMOO project is similar to what Maid and Jordan-Henley discovered early on with the peer tutoring service. Technology provides opportunities to previously isolated groups. However, local politics often acts to enforce the status quo thus negating the potentially positive impact of using the technology. This, indeed, seems to be the crux of the problem. The ArkMOO project clearly demonstrates that new global technologies enhance limited local resources. However, use of those technologies consistently gets bogged down in local politics. (Jordan-Henley & Maid, in press)

Since ArkMOO has been offering online peer tutoring services since its inception, we have more information on providing successful student services. Still, even though we know how to provide quality services that does not always mean students will use the services to their own greatest benefit. While Maid can, and does, make sure that all the cybertutors are first trained as effective Writing Center tutors and only after that are they trained to become proficient with the MOO technologies, he still has no control over what happens at the other end. What seems to be the most telling factor in students using and benefitting from the MOO services seems to be the instructor's commitment to the project and expertise and comfort in regularly using technology. Initially, when the project began, all instructors were proficient and committed. Students got caught up with the project, used it, and their work improved. Once more instructors were brought in, some lacked enthusiasm and commitment, some lacked expertise. This past spring one more instructor from another Arkansas community college began using the tutoring service. She was committed and a regular Internet user. Her students became the single largest users of the tutoring service.

It has been relatively easy to do preliminary assessment of the tutoring part of the ArkMOO project. Student use can be tracked. Students can fill out evaluations forms. Instructors can provide helpful feedback. The effectiveness of the library at ArkMOO, however, is more difficult to assess. We are beginning to attempt to track hits, but this does not always tell us what we need to know. Students sometimes access the library from school machines, sometimes from home machines with a variety of ISP domains. The real issue, however, seems to be that the ArkMOO Library has the potential to provide a more individualized service to students while the librarian and instructor work together as a collaborative instructional team. While technology enables the librarian/instructor team to provide individualized services which are available to students at all times, a combination of student, instructor, and institutional reticence seems to be keeping students from more fully engaging in the resources. Clearly, the future success of the project will hinge on discovering what will get more students to actively use the available resources.

Conclusion

The ArkMOO tutoring service and Library have demonstrated that services can be provided remotely and that they can be successfully organized and delivered in a manner which fits individual and group needs. While potential redesign of the Library and consideration of solutions to some of the obstacles encountered will continue to be discussed and addressed, we will also continue to seek out ways to enhance the scope of the project to fully determine if the use of this combination of technologies is an effective way to provide support services. There is no question that new technologies allow us to deliver services which can potentially aid students in their work. The sticking point remains how can students, instructors, and institutions work together so that more students will make use of virtual services.

References

Daniel, J. S. (July/Aug., 1997). Why universities need technology strategies. *Change, 29*, 10-17.

D'Angelo, B., & Maid, B. M. (1998). Service from a distance: The use of information technologies in support of off-campus students. *CAUSE98 Proceedings* [online]. Available: http://www.educause.edu/ir/library/html/cnc9847/cnc9847.html

Jordan-Henley, J., & Maid, B. M. (1995). MOOving along the information superhighway: Writing centers in cyberspace. *The Writing Lab Newsletter*.

Jordan-Henley, J., & Maid, B. M. (in press). Advice to the linelorn: Crossing state borders and the politics of cyberspace. In D. Sewell & J. Ingram (Eds.), *Taking flight with owls: Research into technology use in writing centers*. Mahweh, NJ: Erlbaum.

Biographical Sketches

Barbara J. D'Angelo is Academic Program Support Librarian for Communication Studies and Psychology at Arizona State University West Library. Previously she was Reference Librarian at Southeastern Louisiana University where she was active in developing web-based library services and integrating technology into the curriculum. She is the Librarian on ArkMOO, a web- and MOO-based environment for providing academic support services in the form of tutoring and library services.

Address: Academic Program Support—0152
Arizona State University West Library
PO Box 37000
Phoenix, AZ 85069
E-mail: bdangelo@asu.edu
URL: http://www.west.asu.edu/bdangelo/index.html
Phone: (602) 543-8527
Fax: (602) 543-8540

Barry M. Maid is Professor of Rhetoric and Writing at the University of Arkansas at Little Rock. He is chief administrator of ArkMOO and Director of the Cyberspace Project where graduate students at UALR tutor community college students across Arkansas. He has done Internet training at various local, regional and national forums.

Address: Department of Rhetoric and Writing
University of Arkansas
2801 South University
Little Rock, AR 72204
E-mail: bmmaid@ualr.edu
Phone: (501) 569-8322
Fax: (501) 569-8279

Strategies for Online Student Learning and Advising

Shirley M. Davis, Director of Learning Innovations
PBS Adult Learning Service

Christopher Reese, Senior Associate for Instructional Technology
PBS Adult Learning Service

Overview

One of the pleasures of working in an emerging field like online education is that no one has all of the answers–yet. We all have pieces of the answer. When we pool our fragmented visions and piecemeal philosophies, we come closer to having broadly applicable systems and holistic philosophies that will serve us in coming years. This presentation will offer for your consideration the vision that the PBS Adult Learning Service has adopted for online courses and student services, examine the guidelines we have developed for online learning, and describe our plans for a student advising site.

Let's focus first on the key questions we have sought to answer, questions that will focus our discussion today:

- What are best practices for online course design?
- Where are the gaps in learner support that can be net via the Web?

Before we address those questions, let me make a few comments about what the PBS Adult Learning Service does and why these questions became so important for us.

Who Are We?

PBS Adult Learning Service is a part of the Public Broadcasting Service, though a part that you may not see when you turn on your local PBS station. Our mission is to support institutions of higher education as they seek to meet the needs of the growing numbers of nontraditional students, learners who do not fit into the mold of the 18-22 year old, full-time student. To do this, we acquire the rights to (and sometimes stimulate the development of) media-based college credit courses that can be accessed on television and/or the Web.

Paralleling these college-level courses, we offer extensive opportunities for media-based faculty development and administrator updating. We serve as the "provider to the providers" by providing high-quality learning materials to colleges so that they can provide effective courses to the nontraditional learners they have chosen to serve.

Those of you who have worked with us know that ours is no small operation. Last year we partnered with over 2000 colleges and through them over 500,000 undergraduate students earned credit using the telecourses and teleWEBcourses that we licensed. Furthermore, we served over

18,000 college faculty and administrators through professional development programs. Since 1981, we have earned the trust of the vast majority of the colleges in the nation.

Challenges of the Web

With the advent of the Web, many things are changing for us. In the past relatively few institutions or organizations could make the large investment required to produce a top quality telecourse; today many institutions are actively developing Web-based courses. Many collges approached us about distributing their materials nationally or internationally. We needed standards to guide us.

Another change the Web has forced us to consider is that, while we have focused on serving colleges in the past, we now need to help students directly. They discover our web site and ask where to find courses that meet their needs. In response, we formulated a plan, later funded by FIPSE, that will allow us to be not only responsive but positively helpful to the learners and potential learners who find our site.

Our Response: A Design Philosophy for Web-Distributed Courses and Services

In seeking to develop approaches to these new challenges, we sought to verbalize some key philosophical positions that form the foundation for PBS-distributed web-based educational materials. We believe that the best educational approaches are:

- learner centered,
- dynamic in their use of the web, and
- competency based.

The adoption of "learner-centered approaches" leads us to value courses designed to serve learners with multiple intelligences, where learning is offered for textual and visual learners, for tactile and theoretical learners, for those who move more easily from the general to the specific or the reverse, from the specific to the general, for those who learn best alone or those who learn through collaboration. In addition, we value courses that provide learners options in terms of their time. Synchronous learning experiences have an important place for some students, but requiring all students to spend their learning time online together does not serve well the nontraditional student. In terms of student advising, we seek opportunities for self-discovery, whether it is building an awareness of one's own learning style or developing a sharper focus on career objectives based on one's one skills and preferences.

In thinking about effective use of the Web in education, we leap past those who are putting their syllabi or the text of their lectures on line in the name of online learning and instead look for ways to break the traditional paradigms of teaching and learning. We seek approaches that actively involve students through discovery and collaborative learning, provide access to the rich resources of the web, and encourage them to have fun with their learning. Our years of using video as a learning tool have led us to value images, both still and moving, which provide effective pathways to knowledge for many students. For student advising and referral, we think about self-tests and self-checks, interaction with others, links to rich resources, and formats that are fun and engaging. Our goal is to provide sites just as compelling for learning as others are for entertainment.

Finally we are committed to the development of competency-based learning. Until learners can be credited for what they already know and can be allowed to acquire new skills and knowledge in many different ways, we are not serving the needs of the students or of their employers. Modularized courses that encourage flexibility in learning and well-indexed learning objects such as those envisioned by the IMS Project are key to the development of competency-based learning.

First Concrete Step: Creating Guidelines

We had one purpose for developing the "TeleWEBcourse Development Guidelines for Producers and Educators." We needed to have a benchmark for what we consider a good teleWEBcourse. For nearly twenty years ALS has had a solid reputation for distributing high quality telecourses, and teleWEBcourse distribution should be no different. Since many producers will be sending us their online courses for review and assessment, our guidelines help everyone understand how that common benchmark is defined.

What exactly is a teleWEBcourse? Although similar, a teleWEBcourse is not an extension of a telecourse. A teleWEBcourse is an "instructional system of integrated media that includes the Internet, video, audio, text, graphics, and accompanying print materials." An ALS teleWEBcourse would carry the equivalent weight of a traditional three-credit college course but serve a broader non-traditional student population. As we work with a teleWEBcourse producer, we focus on modular development so that the course can be offered in smaller chunks to diverse audiences.

The initial ALS teleWEBcourse "Internet Literacy" was developed by Dr. Fred Hofstetter at the University of Delaware. This course was primarily Web-based with all multimedia files housed on a CD-ROM mailed to each student. Although developed prior to the teleWEBcourse guidelines, this course serves as a model online courses for ALS.

The teleWEBcourse guidelines contain two sections: (1) requirements for the proposal, and (2) requirements for development of the online component. The proposal must include a content outline, learner analysis, instructor analysis, instructional development plan, instructional delivery plan, and a development timeline. This section of the guidelines is meant to streamline the development and ensure that the producer has addressed all of the issues. In the event that a course is considered for ALS distribution after development, the instructional design process may be shortened.

In either case, the producer must ensure that the online development requirements are all met. These items include instructional design integrity (similar to Gagne's Nine Events of Instruction), technical specifications, graphic design specifications, site credits, fair use guidelines, and accessible media standards. These development requirements come from a variety of sources including the Yale Design Standards, the National Center for Accessible Media, and PBS Online.

Although ALS' course evaluation is transparent to licensing institutions, they can continue to rely on ALS as a premier provider of courses.

Focusing on Students: Project ACCESS

Recently, it has become obvious by the number of email requests that ever more students are looking for online courseware while virtual campuses are springing up across the Internet. It was clear that many students who wish to enroll in distance education courses lack the support system to do so. Last year the Department of Education granted ALS a FIPSE grant to create "Project ACCESS" to address this need.

Project ACCESS is an interactive Web-based student decision-making and advising service. We envision seven suites of services that will assist students in making better-informed decisions about their education. Project ACCESS will also help students discover their own learning styles and develop a lifelong learning portfolio that will follow them no matter where they may live in the United States.

The seven suites of Project ACCESS guide the user through: (1) creating an individualized learning agenda based on long-term vocational goals; (2) creating a Lifelong Learning Account with transcripts and records; (3) training in writing a portfolio to receive credit for experiential learning; (4) discovering personal strengths and weaknesses as a learner; (5) locating in-person advising; (6) selecting and enrolling in a distance learning program; and (7) assisting in transitions to the workplace.

Project ACCESS is an ambitious project that includes many partners to ensure the integrity of services. Our partners come from academic assessment, student and career counseling, media production, and the labor market. The twenty people on our advisory board help conceptualize and develop each of the seven suites. Also on the board are five community colleges that enroll and manage distance education curricula. They will beta-test Project ACCESS when it rolls out in its initial form about one year from now.

One especially lauded element of Project ACCESS is a Lifelong Learning Account. This is a virtual portfolio kept throughout a lifetime, continuously tracking growth through experiential learning as well as through formal academic credits. This portfolio concept piqued the interest of the Department of Labor, an active partner in Project ACCESS, since it resembles their Career Management Account for every American. Together ALS and DOL will work to create a Career Management Account and Lifelong Learning Portfolio for Project ACCESS.

How will Project ACCESS sustain itself after the FIPSE grant money is gone? During the second year of the project we will be investigating different business models of electronic commerce most appropriate to Project ACCESS. Our goal is to build a new model of Internet business that is simple for learners and at the same time reduces the technical load for the Project ACCESS staff.

While many companies try to make their sites "stickier" to their daily visitors, Project ACCESS will serve as a portal efficiently guiding learners to the information they need, wherever it resides.

A number of companies are already attempting to provide some of these services on the Web. Project ACCESS is by no means designed to compete with any company. In fact, it is the collaboration among these companies that will make Project ACCESS a true success. For example, a student may search the Project ACCESS site for a self-assessment tool and find a listing of commercial tests and choose among. After being presented a sampling of questions, the student receives a short report and, if the results are helpful, is prompted by the provider to take a longer, more thorough assessment test, for a fee. The student can then decide if he/she would like to take that larger test. Since this model drives Web traffic to Project ACCESS-related companies, Project ACCESS becomes a portal.

Other search functions will be available for course listings, degree programs, and different student services. Institutions will get access to students they would not normally get, and non-traditional students will receive guidance toward completing formal degree programs or reaching other educational goals. Individuals with disabilities and handicaps will have a larger variety of options to choose from for their education.

In short, Project ACCESS will assist students making informed choices about: where to enroll and whether to enroll concurrently with more than one college; what programs to select, how and when to transfer credit; where to establish a permanent record; how to belong both to a virtual campus and a learning community; and how to develop long-term personal and intellectual relationships.

Summary

The rapid growth and acceptance of the Web for livelong learning has led the PBS Adult Learning Service to develop new strategies for serving colleges and for supporting students in their search for distance learning programs. The challenges are significant as we work to stay enough ahead of technological developments while at the same time recognize the technological and mindset limitations that hamper many faculty and students in their involvement with the Web today. It is ALS' hope that both the Guidelines for TeleWEBcourse Development and the approaches of Project ACCESS will help move that thinking along in appropriate directions and contribute to the discussions of practitioners.

Biographical Sketches

Shirley M. Davis is Director of Learning Innovations for PBS Adult Learning Service, the nation's largest satellite service for higher education. In that position she is responsible for coordinating all aspects of live satellite events, for developing programming and delivery strategies for PBS' Ready to Earn service, for multiple-media professional development programs and certificate courses, and for teleWEBcourses. She is 1998-9 president of the United States Distance Learning Association.

Address: PBS Adult Learning Service
1320 Braddock Place
Alexandria, VA 22314
E-mail: smdavis@pbs.org
URL: www.pbs.org/als
Phone: (703) 739-5146
Fax: (703) 739-8495

Christopher Reese is Senior Associate for Instructional Technology. Since joining ALS in 1998, he has developed guidelines for acceptance of PBS teleWEBcourses and produced an extensive Web site for Racial Legacies and Learning, a live satellite event about diversity issues. Chris is working closely with the Instructional Management System and the Department of Labor to develop new metadata for educational materials.

Address: PBS Adult Learning Service
1320 Braddock Place
Alexandria, VA 22314
E-mail: creese@pbs.org
URL: www.pbs.org/als
Phone: (703) 739-5792
Fax: (703) 739-8495

Web-Based Instruction: It's Not Just a Web Page

Kathleen Decker, M.Ed., Instructional Designer
A B Technologies, Inc

Nancy Cheski, M.Ed., Instructional Designer
A B Technologies, Inc

In 1998 A B Technologies, Inc. contracted with the US Army Armor School to develop a course of quality instruction to train its Reserve Component Officers. The goal was to have them achieve the same competencies as their active duty counterparts and to take advantage of current advanced technologies to produce a multi-media instructional format. The course prepares combat arms officers to become company commanders and assistant operations officers at multiple organizational levels. The three-phase course spans a two-year timeframe:

> Phase I: Approximately 240 hours of asynchronous, online learning (OLL) via the Internet. Students may take up to one year to complete this phase.
>
> Phase II: Approximately 180 hours, requiring ten months to complete using synchronous distance learning (DL) techniques such as video teletraining (VTT), online collaborative planning tools (i.e, virtual tactical operations center (VTOC), a 3D terrain viewer, and additional asynchronous lessons).
>
> Phase III: Two weeks during which students apply and execute previously acquired skills and knowledge in a resident environment using hands-on collective simulations.

Design Document, Design Standards, Collaboration

Putting a course on-line is more than pasting existing materials into an HTML format or adding a few links or chat room to current resources. A collaboratively created design document helps everyone realize the magnitude of the effort and emerge with some common vision of where the course is going and what it will look like. The development of the document may require several meetings to allow the different stakeholders to participate in the process and to add their particular expertise to the shared vision. We discovered that the more time spent here, and the more involved the stakeholders are in this process, the smoother the development is later on. This is where issues need to surface. Some items we had to address were:

- A common vocabulary for particular structures and capabilities within the course and the training engine/database (e.g., Do we call this a lesson or a module? What is a task?).
- The general functionality/capability of the training engine/database (e.g., randomly generated test questions require a larger database and test security).
- What does/should the database track? Consider storage, educational use of the stored data, and what needs to be analyzed and why it will be useful.

In order to capture everything from both an ISD and a technical perspective, you may have two documents. Each project varies but listed below are issues we considered critical:

Introduction/Overview/Purpose	Features and their theoretical basis
Instructor requirements	Instructional modes/strategies and rationale
Student requirements and demographics	Course outlines
Course framework: terms, structure, etc.	Course context: story line or metaphor
End-of-course competencies, objectives	Course Map: flow from lesson to lesson
Technical requirements	Support documents not included in text

Frequently clients have established graphic design standards that they want incorporated. You will need to work with them to establish a web look/feel that is in keeping with that image.

Developing web-based training is not a solo operation; one person cannot attempt to resolve all the issues and do all the work. Our basic team includes a project manager, instructional designers, subject matter expert (SME), programmers, training developers, and a graphic artist. Members may also need to learn new skills (i.e., ISDs need to know something about HTML; programmers need to learn about the instructional challenges).

Have a Theoretical Baseline for Your Instructional Approach

An educational perspective is important. It helps to maintain focus, as you become involved in daily design details. Several theories contributed to the course design: Bloom, Gagné, Kolb, Merrill, and constructivism. We found aspects of each that would enhance learning in all three phases of the course.

Bloom's taxonomy of verbs illustrates progressive levels of knowledge acquisition and application. We strove to achieve higher level problem solving skills and carefully selected verbs that would lead us to think of exercises and applications to accomplish these goals. In particular, his synthesis and evaluation categories were incorporated in end-of-course competencies.

Kolb discusses four learning styles but we found it's "expensive" to require iterations of the same content. The alternative was to use multiple instructional strategies *throughout the course* and provide materials that eventually covered all learning styles. This approach also challenges students to use other ways of learning. We included a discussion of styles in the student guide to raise student awareness of their style.

Merrill's Component Display Theory classifies learning into two dimensions—content and performance—and includes four types of knowledge: facts, concepts, procedures, and principles. A fifth type—processes—was added by Ruth Colvin Clark. The performance dimension includes three levels: remember, use/apply, and find, with the first two particularly suited to Phase I. Merrill also advocates four primary presentation forms including rules (an expository presentation of a generality), examples (an expository instance of the generality), recall (an inquisitory generality), and practice (an inquisitory instance). Secondary presentation forms include organization techniques, chunking, mnemonics, or attention focusing devices. We used this basic style in almost all concept presentation and incorporated chunking throughout.

Gagne defines nine events of instruction in which each event is associated with learning processes stimulated or used during that event. Similarities emerge between Gagne's learning processes, Merrill's presentation forms, and with some of constructivism's recommended practices. Therefore, we are incorporating these nine events in each lesson.

Finally, constructivism believes that learners construct knowledge as they attempt to understand their experiences and seek meaning. It recommends using conflicting perspectives to force students to rethink their assumptions. Knowledge restructuring was stimulated by placing the student into an immersive, problem solving context they had not yet experienced.

Constructivism also holds that learners test their own understanding against those of others. The design provides such discussion with instructor feedback on test products, email responses to student questions, motivational/remedial feedback initiated after tracking student performance and identifying problems, and a chat room application. Prerequisite knowledge is provided within the context of higher order learning and application through "scaffolding" or the ability to go back to previous information. We accomplished this using glossary definitions linked to hot words and through the navigational map and links/buttons that allow the student an option to return to previous material or view materials in a different format.

Constructivism's student-centered instruction allows the student to decide what, when, where, and how learning will occur. But as Gagne' points out, freeform exploration is often inefficient; and within military constraints, it is an inefficiency ill-afforded. However, we attempted to balance student-centered instruction with other instructional techniques. Acknowledging this limitation, there are learner-control features integrated into the design:

- *Content control* or the ability to select objective sequences, enhanced through use of links or maps which allow the student to select paths through the information.
- *Conscious cognition*—students' awareness of their learning style—is enhanced by features that asks the student to reflect on how they learn.
- *Meta-cognition* or the student's model of "how to learn" was accomplished by using several types of help throughout the course: generality help (definitions, procedure diagrams, principle statements), example help (attention-focusing devices to illustrate how an example relates to the general), practice-feedback help (mind map techniques).

Instructional Soundness and Technical Capabilities: A Natural Conflict

Many instructional design features on your wish list may be too costly for your project budget. We initially hoped to consider students' learning styles by assessing students with an already validated, commercially available system as well as designing what we first perceived as "alternate presentations." As we assessed costs, we found that this included more development hours than were within our timeline.

Consider your audience's technical capabilities and equipment and specify minimum requirements to participate. Some recommend projecting to the lowest common denominator but that may not be required if students can access through systems the client could upgrade. Also, identify any plug-ins or programs the student needs to download to run applications you want to use. Include a program/page in the log-in or start-up routine that checks the student's system and indicates where to get plug-ins or identify problems before participation in your course.

Bandwidth has an enormous impact, too. Some of our initial animations were bandwidth hogs. Even streaming technology resulted in very disconcerting time lapses between the visual animation and the audio description. We ultimately limited screens to 50KB of information. If a graphic needs more time to download, we insert an instruction to that effect. Therefore, we suggest you define your technical limitations and capabilities in the scope of work as best you can. Know what your programming resources can/can't do and outline them in your design document but allow for refinement as you go. And don't short circuit design meetings among programmers, ISDs, and the client.

Interactivity and Electronic Page Turning: And the difference Is . . .

As designers, we also had to shift our thinking about how to create interactivity in this medium (i.e., how to visualize concepts such as click/drag elements, type-in answers, connecting lines, etc.). Our client mandated that lessons were not to be "page turners," so we attempted to define just what interactivity meant. Perceptions ranged from student-to-student contact and collaborative work, student-to-instructor contact/feedback, student with computer actions such as click and drag or data entry with feedback, to simply using the mouse to jump from link to link or mouseover type graphics. They were all forms of interactivity we wanted to use.

Cost can be prohibitive for each of them, not the least of which is the instructor's time to provide personal contact and feedback. The instructor time issue turned out to be a pivotal decision point in our design. We incorporated a toolbar button that allows the student to initiate or participate in a chat with other students. And since these were adult learners we did not require instructor moderation of those chat sessions. Another button initiated email to the instructor for Q&A. But we also created a FAQ button for both technical and educational content questions to reduce the number of questions to the instructor and to encourage self-help access to a valuable resource. As questions are asked, the instructors will continue to populate the FAQ.

Additionally, we decided that most lesson level interactions required computer scoring and some predefined feedback. However, to best aid the student, that feedback included a rationale for correct and incorrect responses, and frequently included schoolhouse "model" answers. This reserved the valuable instructor time for the grading of end-of-volume performance tests that also included the ever-important individualized feedback.

Many of our interactions are conceptualized by the ISD but "created" by the graphic artist. Others used DHTML and required programmer time (e.g., some quizzes and animations that require manipulation [mouseovers, clicking on parts, etc.]).

General Learnings

Web-based instruction is more than meets the eye (i.e., nothing is ever as easy at it seems). Although it can be managed, the learning curve is huge if you:

- Aren't DL design/graphic layout savvy.
- Have to learn new programs to storyboard.
- Don't know any HTML code. Know the basics so you can troubleshoot.
- Have never coordinated a team effort.
- Don't have systems worked out/job aids before prototyping.

We can't over emphasize the importance of communication throughout the process. Decisions that appear to be only technical may have ISD implications. Graphic artists need input and feedback from the ISDs who make the requests. Project managers must keep themselves visible, accessible and act as process mediators. In closing, we offer this advice:

- Be prepared for frustration and limitations; nothing will be perfect.
- You can't do everything and must know when to quit. It's tempting to execute every good idea that surfaces. However, it's best to cut it off and just keep a record of some of the best "good" ideas that arise and use them for future projects or lessons learned.
- Prototype; beta test; pilot. Count 'em; three steps. All are important to do it right.
- If possible, hold training sessions on program(s) you'll use before production begins.

There is still a lot to do to on this project: final testing, tweaking, evaluation, maintenance procedures, and most important, revisit the big picture to see from whence we came and if we hit the target. So far our client is happy and that's one of the most important benchmarks!

References

Clark, R. C. (1989). *Developing technical training: a structured approach for the development of classroom and computer-based instructional materials*. New York: Addison-Wesley.

Driscoll, M. P. (1994). *Psychology of learning for instruction*. Boston: Allyn and Bacon.

Merrill, M. D. (1994). *Instructional design theory*. Englewood Cliffs, NJ: Educational Technology Publications.

Biographical Sketches

Nancy Cheski is an instructional designer and a design team leader for an Army DL project for AB Technologies, Inc. She has major development and implementation experience in career management, interviewing and orientation systems. Nancy has also designed and delivered workshops in team building, creativity, customer service, and business writing. Nancy is a doctoral candidate in Human Resource Management at the University of Louisville (KY) School of Education.

Address: A B Technologies, Inc.
US Army Armor School
Gaffey Hall, Room 200
Ft. Knox, KY 40121
E-mail: cheskin@ftknox5-emh3.army.mil
Phone: (502) 624-6479

Kathi Decker is a doctoral candidate at the University of Louisville (KY) in the Supervision of Education with an emphasis in Organizational Change. She has 18 years training experience in non-profit, manufacturing, higher education, and military training settings. Kathi has conducted workshops in team building, creativity, communication, leadership, and taught classes in production math and quality control among others. Currently she is the lead instructional designer for an Army DL conversion project for A B Technologies, Inc.

Address: A B Technologies, Inc.
US Army Armor School
Gaffey Hall, Room 200
Ft. Knox, KY 40121
E-mail: deckerk@ftknox5-emh3.army.mil
Phone: (502) 624-6479

How the Internet Will Change How We Learn

William A. Draves, President
Learning Resources Network (LERN)

In the 21st century, online learning will constitute 50% of all learning and education. The rapid rise of learning on the Internet will occur not because it is more convenient, cheaper, or faster, but because cognitive learning on the Internet is better than learning in-person. Of the growing number of experts seeing this development, Gerald Celente, author of the popular book *Trends 2000*, summarizes it most succinctly: "Interactive, on-line learning will revolutionize education. The education revolution will have as profound and as far-reaching an effect upon the world as the invention of printing. Not only will it affect where we learn; it also will influence how we learn and what we learn" (Celente, 1997, p. 249). Recent research reported in the *Washington Post* cites studies showing that online learning is equally as effective as learning in-person. And note that we state "cognitive learning," not all learning.

It is still very early in the development of online learning. But the outlines of the potential of online learning are already emerging. The best guide to the next century lies in history, and the in examples of technological transition from the nineteenth to the twentieth century. The automobile and tractor were the driving forces for the Industrial Age. The tractor eventually was demonstrated to not only cover more acres than a horse drawn plow, but to plow deeper (read: better) and thus increase productivity.

Some sectors of society clung to the horse drawn vehicle, of course. The military still had a cavalry in 1939 to confront Hitlers tanks before the obvious mismatch was addressed (Davis, 1993). The tractor changed education for the 20thcentury as well. Prior to the tractor and automobile, Œone room schoolhouses were placed every six miles so that a child would only have to walk at most three miles to school. The one room schoolhouse necessitated one teacher and multiple grade levels in one room. With the automobile, people moved into towns, and even rural residents could take buses to school, thus causing school consolidation and the eventual all-but-extinction of the one room schoolhouse. In the State of Washington, for example, between 1935 and 1939 almost 20% of rural one room schoolhouses were closed (Encyclopedia Britannica, 1945).

And when online learning is combined with a more interactive and facilitative in-person learning, it will easily out perform todays outmoded one-size-fits-all traditional lecture delivery system. "Digital media and Internet communications will transform learning practices," notes Peter J. Denning of George Mason University in his *How We Will Learn* (1996, page 2).
Here are a few of the effects of online learning that will occur in just a few years:

- The average class size for an online course will be 1,000 participants; already today you can get more than 100 people for an online course.
- The average cost of an online course will plummet to below $100 a course; already today prices of online courses are falling.

- There will be hundreds of thousands of topics from which learners can choose; already today you can learn some things online that you cant find in-person.

But perhaps the most devastating and revolutionary change will be how the Internet will change how we learn. Because as we enter the Information Age, the era of lifelong learning, the era of online learning, distance has nothing to do with "distance education." By this I mean that even when the teacher is in close proximity to the learners, the quality of the cognitive learning and teaching will be higher when the cognitive part of the learning is conducted over the Internet. Keoko University in Japan, for example, is already establishing online learning for its on-campus students (Eisenstodt, 1997).

In this chapter I will outline what we already know and can forecast about how the Internet and online learning will change how we learn. We know, for example, that the economic force driving life in the 21st century will be the microchip and the Internet, just as the automobile was the economic force for change in the 20th century. And we know that business will need its workers to learn more, more quickly, and at a lower cost, to remain competitive. We will show that these market forces will create the need and desirability for online learning.

How We Learn Today

For most of history the standard educational setting has been an instructor (or teacher, leader, presenter, or speaker) standing in front of a group of people. This is the most common learning design in society, whether it be for college credit classes, noncredit courses, training in business and industry, high school instruction, or even a Sunday School class.

Basically, 90% of all education has been "information transfer," the process of transferring information and knowledge from the teachers head into the heads of the learners. To do that, teachers have had to talk most of the time. And right up until today that mode of delivery has been the most effective, most efficient, most desirable way to learn.

But as educators we know that the traditional lecture is not the only way to learn. We as learners learn in many different ways, at different times, and from a variety of sources (Knowles, 1973). We also know that learning is not purely a cognitive process, but that it also involves the emotions and even the spirit (Apps, 1991).

The Internet is destroying the traditional educational delivery system of an instructor speaking, lecturing or teaching in front of one or more learners.
The whole discipline of self-directed learning, variously called adult learning or adult education, has shown that the traditional delivery system is only one way to learn. The Internet represents the biggest technological aid helping people to learn in 500 years, according to many educators (Thieme, 1996).

What the Internet is doing is to explode the traditional method of teaching into two parts--cognitive learning, which can be accomplished better with online learning; and affective learning, which can be accomplished better in a small group discussion setting.

Why Cognitive Learning Can Be Done Better on the Internet

Cognitive learning includes facts, data, knowledge, mental skills—what you can test. And information transfer and cognitive learning can be achieved faster, cheaper and better online. There are several ways that online learning can be better than classroom learning, such as:

- A learner can learn during her or his peak learning time. My peak learning time is from 10 a.m. to noon. My stepson's peak learning time is between midnight and 3 a.m. He recently signed up for an Internet course and is looking for a couple more, because as he put it, "I have a lot of free time between midnight and 3 a.m." With traditional in-person classes, only some learners will be involved during their peak learning time. The rest will not fully benefit.
- A learner can learn at her or his own speed. With traditional classes, a learner has one chance to hear a concept, technique or piece of knowledge. With online learning, a learner can replay a portion of audio, reread a unit, review a video, and retest him or herself.
- A learner can focus on specific content areas. With traditional classes, each content area is covered and given the relative amount of emphasis and time that the teacher deems appropriate. But in a ten-unit course, a given learner will not need to focus on each unit equally. For each of us, there will be some units we know already and some where we have little knowledge. With online learning, we as learners can focus more time, attention and energy on those units, modules or sections of the course where we need the most help and learning.
- A learner can test himself or herself daily. With online learning, a learner can take quizzes and tests easily, instantly receiving the results and finding out how well she or he is doing in a course.
- A learner can interact more with the teacher. Contrary to common opinion today, online learning is more personal and more interactive than traditional classroom courses. In an online course, the instructor only has to create the information transfer part of the course—lectures, graphics, text, video—once. Once the course units or modules have been developed, there is need only for revisions later on. The instructor is then free to interact with participants in the course.

Learners will acquire the data and facts faster using the Internet. Officials at University Online Publishing, which has been involved in online learning more than most organizations, say that a typical 16-week college course, for example, can be cut to 8 weeks because students learn more quickly online.

Finally, technology has consistently proven to drive down costs. Recent reports indicate that education costs are grew at over 5% for 1998, well above the 3% average for all other sectors of the economy. With education costs in the traditional system soaring, technological innovations promise the ability to deliver an education more cheaply.

Downward pressure is already being exerted on prices by online courses. Officials at Regents College in Albany, NY, which collects data on 8,000 distance learning courses, say that prices are dropping already. One community college in Arizona, for example, offers online courses at just $32/credit hour for in-state residents, and $67/credit hour for out-of-state learners.

More Interaction Occurs With Online Learning

The heart and soul of an online course will not be the lecture, the delivery, the audio or video. Rather, it will be the interaction between the participants and the teacher, as well as the interaction among the participants themselves. This daily interaction among participants, for example, will form what John Hagel, author of *Net Gain* (1997), calls a "Virtual Community."

The next time you are in a class, count the number of questions asked of the teacher during a one-hour time period. Because of the instructors need to convey information, the time able to be devoted to questions is very short. In an online course, everyone can ask questions, as many questions as each learner wants or needs.

There is more discussion. In an online course, there is more discussion. If there is a group discussion with thirty people and six to eight people make comments, that is a successful discussion that will take up almost a whole hour. And almost everyone in the group will agree it was a lively. Now if you go into an asynchronous discussion forum on the Internet, and thirty people are there, and six to eight are making comments, you will conclude that the discussion is lagging.

The same number of comments on the Internet do not appear to be as lively a discussion as when delivered in person because the capability and capacity of the Internet is that every person can make commentsat the same time. A transcript of a typical online discussion would take hours to give verbally. Online, we can participate in discussions easily, absorbing more information in a much shorter time and engaging in more interaction, not less.

- There will be an average of 1,000 learners in a course. This will occur for a number of reasons.
- There are one thousand people in the world who want to learn any given topic at any given time, even mango trees or Adlai Stevenson.
- Because people will want to learn from the foremost authority, there will be only 2-3 online courses for each topic.
- The cost of an online course will be extremely low, probably under $100, even for credit classes. This will occur because educational institutions can make more money on high volume and low prices than they can on low volume and high prices. It will occur also because the only way an educational institution can lose its market-share for a given course is because the course is priced higher than an alternative course.

The Forces Driving Online Learning

There are several forces that will turn this scenario for online learning into reality, and turn it into reality very quickly. They include:

- ***Business***. Business will be the biggest force. Business now understands that in order to remain competitive and profitable, it will need employees who are learning constantly. The only cost effective way for this to happen is with online learning. So business will require its people to learn online, and it will look to recruit college graduates who can learn online. Colleges and universities will quickly adopt online learning because business will demand that capability from their graduates.
- ***Youth***. My children have never taken a computer course. And they never will. Because they are not just computer literate, they grew up in a digital culture. Young people want to learn online. They understand the future, because it is the world in which they must work and compete. Young students will choose online learning.
- ***Competition***. Just one college offering online courses at a low cost and recruiting high volume will force other educational institutions to do the same. In fact, many colleges are involved in online learning, and the cost of courses is declining steadily, according to an official at Regents College, which keeps a database of over 8,000 distance learning courses.

Conclusion

Online learning is rapidly becoming recognized as a valid learning delivery system. The number of part time students in higher education, to name just one educational system, now outnumbers full time students. The number of colleges offering online courses last year soared to over 1,000, and the number is growing. Online graduate programs and certificate programs have doubled over one year ago. Online learning has grown exponentially in the business sector, according to Elliot Masie of Saratoga Springs, NY, one of the foremost experts on online training in the workforce. Surveys by the American Society for Training and Development (ASTD) see online training replacing much of on-site training in the near future.

Online learning will do for society what the tractor did for food. A century ago food was expensive, in limited supply, and with very little variety. Today food is relatively cheap, in great supply in our society, and with tremendous variety. The Internet will do the same for education. More people will be able to learn more, for much less cost, and with a tremendous variety in choice of topics and subjects. It is something that societies of the past could only dream about. And it will come true for us in a very short time.

References

Apps, J. W. (1991). *Mastering the teaching of adults*. Malabar, FL: Krieger.

Celente, G. (1997). *Trends 2000*. Warner Books.

Davis, K. S. (1993). *FDR: Into the storm 1937–1940*. New York: Random House.

Denning, P. (1996). *How we will learn*. Fairfax, VA: George Mason University.

Eisenstodt, G. (1997, February:March). *Japan shuts down its education assembly line.* FastCompany, p. 4042.

Goldberg, D. (1998, April 5). Teaching online. *The Washington Post*, R04.

Hagel, J. III, & Armstrong, A. G. (1997). *Net.Gain*. Boston: Harvard Business School Press.

Knowles, M. (1973). *The adult learner: A neglected species*. Houston: Gulf.

Thieme, R. (1996). Presentation at the Metcom conference, Chicago, IL.

Biographical Sketch

William A. Draves is President of the Learning Resources Network (LERN), the largest lifelong learning association in the world, with more than 4,000 members in 8countries. He does consulting, writing, and speaking on online learning and marketing online programs. His comments were printed in the New York Times (September 9, 1997). Other articles include Cyberlearning: Fast Forward to the Future in Executive Update magazine. He also writes a monthly column for Marketing Programs Online. He has offices in River Falls, Wisconsin, and more information on Mr. Draves is available on LERN's web site at www.lern.org (under LERN Offices).

Address: LERN
PO Box 9
River Falls, WI 54022
E-mail: draves@lern.org
URL: www.lern.org
Phone: (715) 426-9666
Fax: (888) 234-8633

The Importance of Media Psychology in Improving the Quality of Distance Education

Dr Miles Ellis, Director
Educational Technology Resources Centre
University of Oxford
England

What Do We Mean by Media Psychology?

Media Psychology is a recognised branch of psychology which is best summarised by the definition provided by Division 46 (Media Psychology) of the American Psychological Association (Luskin & Friedland, 1998):

> Media psychology encompasses the use of media in activities, events, theories and practices regarding the effects and behaviors stimulated by media elements. These include pictures, sound, graphics and content and their effects on the senses and intelligencies. More specific individual definitions may be refined when one examines the psychology of constructing or accessing programs or services on an individual or societal level, using attention, behavior, physical, intellectual and cultural change as measures.

In the Fielding Institute's 1998 syllabus for Knowledge Area 23 (Media Psychology) of their Psychology Program (Luskin, 1998), this definition is extended by adding:

> Sensory and cognitive psychology, systems theory, human development, motivation and learning and communications theory are all overlapping and synergistic specialities having implications for media psychology.

However, these formal academic definitions do not give the layman a real feel for the importance of media psychology, and for this we must turn to another source, namely a book entitled *The Media Equation* (Reeves & Nass, 1996), which states that **media equal real life**.

The basis for this remarkably simple, yet astonishingly profound, statement is discussed in the next section of this paper.

The Importance of the Media Equation

In their book, Reeves and Nass describe the results of a whole series of experiments that they have carried out which have led them to the Media Equation. In essence these experiments repeat a wide range of standard psychological experiments examining inter-personal and other relations and psychological reactions, but with one party replaced by a computer or a television set. The conclusions that they reach are astounding:

- People are polite to computers
- People treat computers with male and female voices differently

- People react to images invading their personal space
- People react to motion on the screen in the same way as to real motion
- People respect specialists–even when they are machines!
- People like being flattered–even by a machine!
- People respond to certain personality characteristics such as dominance/ submissiveness and friendliness/ unfriendliness–regardless of whether these are displayed by people or inanimate objects!
- People respond especially to changes in personality
- Dominant people prefer a computer that starts out submissive but then becomes dominant more than one that is consistently dominant
- Submissive people prefer a computer that starts out dominant but then becomes submissive more than one that is consistently submissive.

These are only a subset of the results that Reeves and Nass document in *The Media Equation*, which also discusses such issues as the effects of arousal and negative (visual) experiences on both attention and memory, as well as the importance of timing, synchrony, peripheral vision, and cuts or other transitions on the screen.

Taken as a whole, Reeves and Nass demonstrate that the way in which the brain has evolved over millions of years to respond to external visual impulses is not noticeably affected by any consideration as to whether the source of those visual stimuli is reality or an image on a screen. The effect of this can be profound.

A trivial example of this concerns one of several video sequences used by Reeves and Nass to examine the effect on brain activity of visual orientation in response to movement. Analysis of the brain activity of the volunteers by use of an electroencephalogram (EEG) showed that brain activity was broadly in line with what might be predicted in response to real objects moving in the field of view of the volunteer. However, this also showed that the key message of this particular video sequence, which was a television commercial, was presented at precisely the point in time at which the action on the screen had resulted in the lowest level of brain activity and attention to what was being presented! An understanding of the media equation and media psychology by the producer of this commercial would clearly have led to a much more memorable, and thus more effective, commercial.

How Does Media Psychology Affect Distance Education?

Distance education, in the sense that we are using the term in this paper, is a media-based activity which will normally be delivered in an asynchronous manner. In other words, we are not considering videoconferencing or other synchronous forms of delivery – although some of the results detailed in *The Media Equation* do have a significant bearing on such types of activity.

We are, rather, referring to teaching and learning which will take place by the student viewing a videotape, CD-ROM, web-site, or some other form of educational material which is viewed by the student in a different place, and at a different time, from the place and time where the teacher created it. And it is in precisely these situations that Reeves and Nass have showed that quite small changes in the way in which information is presented on the screen can have major effects on the ability of the student to comprehend and memorise what is being presented.

A particular case of interest concerns the effect of a computer's "personality" on the user's evaluation of the material being presented by that computer. Amazingly small changes in the way in which the computer interacts with the user can have a substantial effect on the user's evaluation, and hence acceptance, of what is being presented, and it would not be difficult to program computer-based learning systems, multimedia packages, etc, to evaluate the user's personality traits (dominant/submissive, friendly/unfriendly, etc) and to then adjust their own response pattern in the same direction. (Opposites may attract, but all research shows that we really prefer people—or computers—of a similar type to ourselves.)

What Next?

Media psychologists are a subset of the class of psychologists, and are thus primarily interested in the psychological responses to particular situations. However it is educationalists and media specialists who must take these research results and develop ways of utilising them to improve the quality of learning. Moreover, although Reeves and Nass, for example, have carried out extensive research over many years this research appears to have all been carried out with volunteers from a particular sub-class of the human species – namely those living in a highly developed industrial and media-rich society, and probably mainly or exclusively having reached adulthood.

Some of the results that they have recorded might reasonably be expected to apply across all sectors of humanity—the real "old brain" reactions—but others might expect to be, at least partially, affected by prior experience and exposure to various forms of media. It is, therefore, important that further research is carried out in order to avoid the possibility of developing a series of techniques and concepts which will significantly improve the effectiveness of the learning process in Southern California, but which will have little or no effect in other areas of the world – or which might, in extreme cases, even have a negative effect.

Such research should, ideally, be carried out in a collaborative manner, by researchers working in different cultures and different geographical locations.

Conclusions

The importance of media psychology in the effectiveness of media-based education and training cannot be over-emphasized. The media equation, in particular, provides us with some very powerful clues as to what to do, and what not to do, in order to maximise the acceptance, understanding and retention of information imparted by various forms of media. However, more research needs to be done to confirm what has already been discovered, to identify what areas of media psychology are universal and what areas are open to variation due to the learner's geographical, cultural or other influences, and to evaluate the relative importance of these various psychological effects in the specific context of formal learning.

Armed with this information we will be ready to create significantly better distance education programmes than has been possible heretofore.

References

Luskin, B. J. (1998). *Knowledge area 23 syllabus: Media psychology*. Santa Barbara, CA: The Fielding Institute.

Luskin, B. J., & Friedland, L. (1998). *Task force report for the division of media psychology of the american psychological association: Media psychology and new technologies.* Encino, CA: Media Analyst.

Reeves, B, & Nass, C. (1996). *The media equation: How people treat computers, television, and new media like real people and places.* Stanford, CA: CSLI.

Biographical Sketch

Dr Miles Ellis is Director of the Educational Technology Resources Centre at the University of Oxford, which is responsible for evaluating new media technologies in order to assist the University to develop its strategic policies in this regard, for advising individual members of the University how best to use such tools to best effect in their teaching, and for supplying a full range of audiovisual services to the whole University. Previously he was Director of the Computing Teaching Centre, also at the University of Oxford. Dr Ellis is also Chairman of the Educational Television & Media Association, is Vice-Chairman of the European Union's PROMETEUS project for the PROmotion of Multimedia in Education and Training in EUropean Society and also Chairman of its Special Interest Group on interchange, reusability and portability of educational multimedia material, and is a member of the Executive Committee of the British Universities Film and Video Council. Dr Ellis won a Gold Award for an early videotape-based course on computer programming at the 1983 New York International Film and Video Festival as a result of its innovative style and structure. Dr Ellis holds MA degrees from both Cambridge and Oxford Universities, and the degrees of Candidate of Sciences and Doctor of Philosophy from the Hungarian Academy of Sciences; the latter were awarded for his work on user-adaptable programming languages for the control of machine tools.

Address: Educational Technology Resources Centre
37 Wellington Square
Oxford OX1 2JF
England
E-mail: Miles.Ellis@etrc.ox.ac.uk
URL: http://www.etrc.ox.ac.uk/Personal/Miles/Miles_Ellis.html
Phone: +44 1865 270528
Fax: +44 1865 270527

Providing On-Line Learning Opportunities to Under-Served Populations: Adult Basic Education and World Wide Web Resources

Margarete Epstein, Technology Assistant
Ohio Literacy Resource Center
Kent State University

Building a Collaborative Network and Web Presence

Web-based learning materials created for an under-served population such as adult basic education students are scarce, though needed. Organizations such as the Ohio Literacy Resource Center (OLRC) are making materials available on-line for students who need help building basic skills and for the teachers who teach in countless programs throughout Ohio and the country. This paper will highlight the joint efforts of literacy organizations around the country to provide instructional materials directly to teachers and students via the Internet. Developing for this population demands special considerations.

Distance learning opportunities for the adult literacy population are traditionally scarce or non-existent. Research on distance learning and adult literacy students is limited as well (Fleischman, 1998). Adult basic educational organizations around the country are exploring the use of web-based distance education for adult learners and for teachers. The World Wide Web (WWW) provides potential for the adult basic learning community but is also fraught with the same roadblocks that are present for other educational communities. The consolidation of resources via WWW servers located throughout regional hubs and other major adult literacy educational organizations represents the backbone of resources for adult educators and students. These resources are growing and new avenues for learning and teaching on the WWW are being created.

Collaborative Effort of Literacy Organizations

In 1991 the National Literacy Act was passed as a way to encourage and expand the goal of creating a fully literate society. As part of this goal initial funding was provided to the department of adult education in each state to create State Literacy Resource Centers. The OLRC is one such center. Most states have a state literacy resource center that functions similarly to the OLRC; they provide support to the local literacy organizations in their states.

The federal government funds the National Institute for Literacy (NIFL). NIFL specifically funds four regional hubs that in turn act as a central web organization point for the state literacy resource centers throughout their region. The OLRC is the hub for the Midwest region. There are hubs for the Eastern, Southern and the Western/Pacific regions. Internet-related projects throughout these hubs are linked to the Literacy Information and Communication System (LINCS), a web site maintained by NIFL (http://novel.nifl.gov). LINCS acts as the vortex for the hubs' web projects. These vary from administrative to learner resources that are designed with the adult literacy community in mind. LINCS also provides a much needed resource base for adult literacy legislative and national issues such as advocacy, policy, and grants and funding opportunities.

Creating Resources for the Adult Literacy Community

The primary initial goals of the web servers throughout the hubs were to provide resources and avenues for communication for adult literacy education teachers and administrators. These goals were met by putting existing research and topics of concern on-line in text form and providing discussion boards and discussion lists specific to adult educators and administrators. These original texts from the OLRC included in-house publications pertinent to the Ohio adult literacy community and were placed on a gopher server. The discussion list Ohiolit was created and email was encouraged as a way for adult literacy professionals in the community to begin networking and consolidate their efforts to support one another.

As the OLRC moved from gopher-based resources to web-based resources in 1995, considerable effort had been made to keep these resources feasibly available to the adult literacy community. By keeping web page design simple and by limiting digital video, audio and programming such as Java, materials are assured to be useable by the many adult literacy programs that are operating with older computers, browsers and slower connection access.

National discussion lists available through NIFL cover topics such as Workplace Literacy, Family Literacy, English as a Second Language, and Technology Literacy. They are active and provide forums for students and teachers to discuss topics pertinent to the lists. Another discussion list supported by the literacy community is the National Literacy Advocacy (NLA) list. These lists provide ongoing communication between various constituencies and a support network within a system formerly marked by isolation.

Barriers to Use of the Internet

WWW content for adult literacy programs has been notably missing from the vast resources now available to K-12 systems and the higher education population. Opportunities for web-based distance education has been even more lacking. Rosen (1998) discusses some of the issues surrounding the slower growth of Internet use in general for adult literacy populations. In his 1996 research on the use of the Internet among students and teachers he explains that teachers do not encourage and incorporate the use of the Internet into classrooms for a variety of reasons. They may be unfamiliar and uncomfortable with the technology, they have difficulty finding appropriate content, and they need support and training on how to use integrate the Internet into the classroom. Students, though often eager to explore and learn to use computers also find the lack of access to be a barrier. Terilyn Turner (1998) notes that the question "How do we bring students to the classroom?" ought to be "How can we deliver instruction without a classroom?" She contends that the adult literacy field needs to be addressing this issue in creative and brave new ways that transcend traditional teaching and learning.

Other barriers noted by adult literacy and technology researchers center around the human element of integrating and using computer technology to learn. Many teachers and administrators are fearful of new technology because it can be intimidating. The cost (which for the adult literacy community is proportionally very expensive to their overall budgets) makes these new teaching tools more likely to be handled with kid gloves rather than to be rigorously explored for their potential applications. Inevitable error messages encountered in the daily use of the WWW are enough to cause confusion and abandonment of the computer by many adult education users. Additionally, both students and teachers are likely to be put off by the overwhelming content available when doing web searches for projects.

Ultimately, teachers and students need to have generous time allotted for instruction on how to use computers and specifically how to take advantage of the Internet. This lack of base instruction is a serious impediment to the goal of full inclusion of adult literacy students and teachers into using the WWW for distance learning projects. Because the use of the WWW for distance learning includes an assumption of basic computer and Internet competency (enough at least to get on-line and to navigate the site) this is probably one of the most serious impediments for distance learning opportunities.

Projects of Note

How can the Internet be most useful to adult literacy practitioners and students? As noted before, discussion lists and discussion boards provide a powerful mode of communication for students, teachers and administrators from a variety of adult learner perspectives. Other innovative projects provide staff development learning opportunities and student self-guided learning.

- Providing teachers and learners opportunities to learn how to use the Internet is a first step. This site (created by a National Institute for Literacy research fellow) is the kind of tool that provides the base learning for using the Internet that teachers and students need.
  http://www.nifl.gov/susanc/inthome.htm

- *Beginnings I* and *Beginnings II*, a yearly project sponsored by the OLRC, provides on-line student-written stories for students and teachers to use either in the classroom or independently. This resource acts as a low risk introduction to on-line learning because it is easy to navigate and has material pertinent to many adult literacy students.
  http://literacy.kent.edu/Oasis/Pubs/Beginnings/index.html
  http://literacy.kent.edu/Oasis/Pubs/Beginnings2/index.html

- Student-created projects on the WWW have special appeal to students. They are written about topics of concern to other adult learners and at a level appropriate for many lower level literacy learners. This factor cannot be underestimated. There are many excellent projects on a variety of topics on the WWW, but the reading level is either prohibitively too high for many adult literacy learners or because it is written for young children is overtly childish and not appropriate for the adult learner.
  http://hub1.worlded.org/LEARNERS/student.htm

- Distance learning projects for students and teachers, though rare, do exist. One such can be found via the Star Schools grant funded project *LiteracyLink*. This is a collaborative effort between KET/The Kentucky Network, PBS, Kentucky Department of Education and the National Center on Adult Literacy and is still in the pilot stage. http://litlink5.pbs.org/litteacher/

- Another distance learning project available on the WWW is through California's Outreach and Technical Assistance Network (OTAN). This site has a student interactive learning area and a teacher professional development area. Registration is free. http://www.otan.dni.us

- Minigrant projects created and piloted by adult literacy programs in Ohio highlight the use of web-based materials for self-guided or small group learning in classrooms. When coupled with email interaction between adult literacy classes within Ohio, they become simple but powerful uses of the WWW for distance learning and sharing among adult literacy students and practitioners. http://literacy.kent.edu/Minigrants/index.html

- Email, one of the most widely used features of the Internet and for distance learning, is highlighted in the *Email Projects* page. This site provides adult learners with a multitude of interactive topics. http://www.otan.dni.us/webfarm/emailproject/email.htm

Ultimately it is because of the enduring efforts of literacy related organizations and literacy programs throughout the country to encourage the use of the WWW as a resource for lifelong learning that distance learning through Internet-based materials will become more mainstream for adult literacy students and teachers. According to the National Adult Literacy Survey (http://nces.ed.gov/nadlits/naal92/), nearly 90 million adults have some to significant difficulty conducting everyday literacy and numeracy activities on the job, in the community and within the family. Providing on-going access to engaging and relevant Internet-based materials and learning opportunities is one way to build these literacy and numeracy skills. Making non-adult literacy organizations aware of this effort to include the adult literacy students in the growing use Internet educational activities is an important part of the overall strategy to promote the use of these resources.

References

Fleishman, J. (1998). Distance learning and adult basic education. In C. Hopey (Ed.), *Technology, basic skills, and adult education: Getting ready to move forward* (pp. 81-91). (Information Series no. 372). Center on Education and Training for Employment, College of Education, The Ohio State University. (ERIC Document Reproduction Service)

Rosen, D. (1998). The Internet and adult educators. In C. Hopey (Ed.), *Technology, basic skills, and adult education: Getting ready to move forward* (pp. 91-102). (Information Series no. 372). Center on Education and Training for Employment, College of Education, The Ohio State University. (ERIC Document Reproduction Service)

Turner, T. C. (1998). Technology in adult education programs. In C. Hopey (Ed.), *Technology, basic skills, and adult education: Getting ready to move forward* (pp. 59-70). (Information Series no. 372). Center on Education and Training for Employment, College of Education, The Ohio State University. (ERIC Document Reproduction Service)

Biographical Sketch

Margarete Epstein is a doctoral student at Kent State University. She has worked at the Ohio Literacy Resource Center since 1995. Her main interests are using and integrating the Internet into teaching and promoting self-directed learning.

Address: 414 White Hall
Ohio Literacy Resource Center
Kent State University
Kent, Ohio 44242-0001
E-mail: mepstein@literacy.kent.edu
URL: http://literacy.kent.edu
Phone: (330) 672-2007 Ext 20
Fax: (330) 672-4841

Virtual Conversations:
A Modest Means for Engaging Faculty at a Distance

John Floyd
University of Maryland University College
Heidelberg, Germany

Cynthia Whitesel
University of Maryland University College
College Park, Maryland

Context for Asynchronous Community

College and university teachers employed in one institution with a common location have long worked within a relatively stable community of knowledgeable peers. Developing such a community of peers across disciplines usually requires negotiations about attitudes, beliefs, and rules of discourse. This is even more true for geographically dispersed faculty with diverse backgrounds, local cultures, and academic professions.

As universities, colleges, and corporate environments expand their distance learning offerings and create distance education (DE) programs, more and more adjunct faculty are being hired. Training adjunct faculty, providing a sense of community, and acculturating them to the institution's practices can be challenging and costly. Creating a listserve that brings the dispersed faculty together can address some of the many challenges associated with part-time faculty. Providing distance and part-time faculty with the opportunity to converse and negotiate the various boundaries can create a virtual "halls of academe" in which distance faculty can stay informed in a timely way, participate in faculty development, and share their experiences with one another.

Benefits to the Institution and Faculty

Having an asynchronous online community benefits the institution as well as the faculty, far outweighing the costs of maintaining the listserve. With faculty geographically dispersed, the costs of bringing faculty together for faculty meetings and development can be prohibitive. Also, administrative information can be dispersed quickly and inexpensively, and faculty can confirm receipt quickly. Faculty can share information readily on the list and discuss its implications, applications, and usefulness.

Being able to provide faculty development to a geographically dispersed faculty is perhaps the most significant benefit to the institution, as well as the faculty. UMUC has used the listserve successfully to introduce faculty to distance education issues in general and to the developing technologies used. Administration has solicited faculty opinion of policies, changes, and needs by surveying faculty via the online list. Participating in the virtual discussions provides faculty with practice managing online discussion often well-suited for computer conferencing. Members of the list can receive training online and share their knowledge, experiences, and skills.

The faculty participants on the list have vigorously discussed the transition from the "open university" model to the online computer conferencing model. Together, faculty have addressed many of the issues related to teaching online. Other faculty members, who had not been participating, joined the list to share their questions and solutions. These discussions not only prepare other faculty new to the distance learning environment, they also provide "mentors" when needed. Although this passage has been a particularly difficult one for the faculty, having the opportunity to vent their frustrations and discuss the benefits and risks has eased the transition.

About the UMUC-Worldwide DE Program

University of Maryland University College (UMUC) first offered undergraduate courses to the U.S. military community in Europe in 1949. In 1956 the UMUC overseas program was expanded to include U.S. military locations in Asia. Worldwide, UMUC currently offers courses at more than 150 locations in over 35 countries on all seven continents and by distance education on several "ships at sea."

Maryland in Europe first offered online courses in the spring of 1995. Enrollments have grown from a total of 300 in the first year to 3000 in 1998. The program has been very well received, particularly by the members of small military communities in isolated locations and by students in need of upper level courses in less popular academic disciplines. An additional benefit for students is the asynchrony of not having to attend classes at set times and locations.

A new schedule of classes is offered five times a year at approximately ten-week intervals. Each three-semester hour class comprises fourteen weeks of instruction.

Beginning in the fall of 1998/99 the distance education course offerings of the European and Asian Divisions of UMUC were combined, permitting students in both Divisions to enroll across Divisions. This collaboration between Divisions essentially doubled the course offerings in both Divisions.

About UMUC-E DE Classes

Classes were initially offered via e-mail and listserve. For each class the instructor and students were enrolled into a closed discussion list that served as the virtual classroom. Subsequently, faculty and student Web pages served as repositories for instructional materials and student assignments. During the last year, the European/Asian Divisions have been mandated to move to a virtual classroom with computer conferencing and groupware components. Currently all online courses are offered over WebTycho, a proprietary web-based educational delivery system developed by UMUC.

About UMUC DE Faculty in Europe and Asia

Permanent, non-tenured lecturers who are located throughout the European military theater teach most of the UMUC DE classes in Europe. They each their online classes from diverse locations in Germany, the United Kingdom, Iceland, Spain, Italy, Greece, and Turkey. A number of lecturers who have returned to the U.S. or Canada continue to teach for the program on an adjunct basis. Of those currently subscribed to the list, eight are in the U.S. and one resides in Canada. Many have never met face-to-face, but know each other only through the online discussion list as an online presence with a particular persona.

Virtual Faculty Meetings

Shortly after the first offering of online classes in the spring of 1995, a DE faculty discussion list was created, called <de-fac-forum>. The purpose of this forum was to facilitate faculty awareness and permit exchange of ideas related to teaching in the online environment. Active DE faculty were encouraged but not required to subscribe to the forum. Even today the forum is relatively small, just 55 subscribed faculty and 8 administrators. About 12 to 15 are regular participants, while others lurk, graze, and respond occasionally. For these faculty, the faculty discussion forum serves as a continuous faculty meeting.

Making a Faculty Discussion List Work

Although no moderator is required to make the list active, there are some lessons learned to share.

- Free and open discussion is encourage and tolerated.
- Administrators should participate–carefully. (Without an "audience," the forum would die.)
- Enlightened administrators should commit to permitting members to freely discuss issues. The Director invited administrators to join the forum, but warned them not to "act" like administrators.
- Members should present salient issues to discuss. Trivial issues usually draw little to no comment.
- The Director (or administrator) should monitor the list to answer questions and sometimes provide some guidance to the direction of the conversation.
- The list should fill an already defined and stated need. In this case, a need to connect isolated colleagues was articulated.

About <de-fac-forum>

From the beginning, the rules for the list were established with the intent of fostering "academic freedom." Starting with the information file sent to subscribers, the intentions were clear: "Welcome to de-fac-forum, a venue for the free and open discussion of issues and the sharing of ideas related to the practice of teaching online."

The <de-fac-forum> is "unmoderated," which means that messages need not be approved before they are posted to the list. To promote a sense of "confidentiality" and as a professional courtesy, members are asked not to forward messages to non-subscribers without first acquiring explicit permission to do so from the author(s) of the message. With little thought to restriction, the list took on a life of its own, serving many purposes benefiting both the institution and the participating faculty.

Issues on the Forum

Issues may be initiated by anyone subscribed to the forum. In the early days to get the conversation going, the list owner (the Director, DE Programs) set several topics before the members of the list, including:

- Resources for DE. Do we need special texts? What other resources are needed for a DE class?
- Online delivery. If DE is not independent study, then what is it? Can I put my classroom "on the screen?" Do I lecture? Will discussion groups work?
- Student interaction. What level should be expected and how do we stimulate students to participate.
- The DE syllabus. All agree that more planning is needed to teach online. Does this mean more course "structure" will be provided? Is this a good thing?
- Chat, MAUDs, MUDs, and MOOs. Should DE include real-time interaction?

As time went on, other issues emerged, either spontaneously out of other issues or by design in response to questions raised by members of the faculty and the administration.

- Online course evaluation.
- Reimbursement for faculty online expenses.
- Course length.

A number of issues have stimulated protracted and sometimes heated online discussions.

- Procedures for online examinations. (170 messages; 3 months)
- Transition to a web-based system. (212 messages; 4 months)

Typical discussion issues generated from 40 to 60 messages over four-to-six weeks duration.

- DE pedagogy
- Student writing skills and grading papers online
- Online vs. proctored final exams
- DE and copyright issues

Faculty Perceptions of de-fac-forum

Some comments by faculty members reveal its usefulness and perhaps its attraction.

De-fac-forum is a faculty meeting without suits and ties. Having followed de-fac-forum for the last year or so I've found the exchanges informative, necessary, and surprising. Those with experience inform those of us with very little of what to expect in DE classes, how to deal with it when it comes up, and where to turn when we run into trouble.
. . . The surprising aspect of the de-fac-forum format is its frankness. Contributors say what they think without fanfare. Sometimes faculty recoil in horror, but we do that at faculty meetings too.

I think I have read every single message on this forum these last four years. Certainly, some messages have not followed the accepted norms of professional discourse, which to my mind is a good thing. At times, member X uses a tone of sarcasm and outrage; at times member Y uses a form of syntax that taxes my IQ. At times member Z so patently is seeking to curry favor in order to receive favors from the administration.
The DE Faculty Forum has been most useful to me as a source of concrete information on DE-relevant topics, such as today's reference re: copyright use and the status/usage of WebTycho. It has been less useful when employed for lengthy complaints.

Our forum has permitted DE teachers of various disciplines to learn from one another. It's become several forums. It's possible to have in-depth discussions via private email with offline. Requests for bibliographic information even resulted in one faculty member, a lurker whom I did not know, driving to [some location in another country] to find some bibliographic material for one of my classes.

Obviously, something new is afoot. The nature of electronic communication has driven a lot of research over the part few years, and if we ever get around to offering a course in something like "Conceptual Issues in Cyberspace," our forum comments could almost serve as a text.
(Note the use of "our forum." Faculty feel they own their discussion list. Faculty even discussed previously starting a list of their own, without administrators, on a private server.)

I find that the DE forum provides the only sense of institutional cohesion I have experienced with Maryland. I would have no contact with any faculty at all, otherwise. Where I live and teach we almost never have faculty meetings, and when we do, no one shows up.

Other faculty members have commented they use the forum for technical tips, useful URLs, and other information relevant to teaching online.

Hardware/Software Components

For those interested in the technical specifications, we've provided a list of our hardware and software.

- Brent Chapman's 'Majordomo' list manager, version 1.93
- Server: Gateway E-3000/110 233 MHz Pentium II processor with 120 MB RAM and 6 GB memory.
- Operating system Linux RedHat 5.1

Biographical Sketches

John R. Floyd, Ph.D., N.C. State University, is formerly a self-employed psychological consultant and university faculty member. Since 1986 Dr. Floyd has lived and worked in Heidelberg, Germany, as an administrator with the University of Maryland in Europe. In the spring of 1995 he accepted responsibility for creating the Distance Education Programs for the European unit, which has grown from 300 enrollments in the first year to more than 2800 enrollments in the past year. The DE Programs currently employ more than 100 faculty members scattered across Europe and the U.S. Dr. Floyd still teaches occasionally, both in class and online. He relaxes by writing screen scripts and producing short dramatic videos.

Address: University of Maryland - Europe Unit 29216
APO AE 09102
E-mail: jfloyd@faculty.ed.umuc.edu
Phone: +49-6222-770410
Fax: +49-6221-378327
For more information, please see: http://faculty.ed.umuc.edu/~jfloyd/resume.html

Cynthia Whitesel, Adjunct Associate Professor, University of Maryland, has almost 30 years of training and teaching experience in workplace and classroom settings, during which time she has also worked as a professional writer, editor, and information systems analyst. She has trained extensively in technical and business writing, editing, proposal writing, corporate communications, briefings, computer user documentation, and other areas. She has taught a variety of writing and literature courses for several distance learning programs at the University of Maryland University College, Park College Internet, and Anne Arundel Community College, and for several corporate training programs. With experience in various distance delivery systems, she consults in faculty training and instructional design for distance programs.

Address: University of Maryland University College
609 Lees Bridge Road
Nottingham PA 19362-9115
E-mail: whitesel@brandywine.net
Phone: (610) 998-0302
Fax: (610) 998-0196
For more information, please see: http://polaris.umuc.edu/~cwhitese/bio_cwhitesel.htm

Transforming Faculty for Distance Learning

Nancy Franklin, Director of Planning and Faculty Development
Indiana State University

Donald E. Kaufman, Instructional Designer
Indiana State University

Our presentation, "Transforming Faculty for Distance Learning," will describe the approach we have taken at Indiana State University (ISU) to prepare our faculty for the distance education environment. We will focus our talk on the background, content, and implementation development initiative for faculty needing to transform traditional courses to a distance delivery format, or who would like to integrate media technologies into their courses.

My name is Nancy Franklin, and I am Director of Planning and Faculty Development at ISU. I will be sharing with you some background about Indiana State University's Course Transformation Academy, then will turn to my colleague, Don Kaufman, who will sketch out in more detail how we have structured the CTA.

Indiana State University's need to provide faculty development focused on the needs emanated from a partnership it formed in 1997 with the public two-year institutions of higher education in the state to articulate degree programs and make the associated courses available via distance education throughout Indiana. This partnership, DegreeLink, is a 2+2 baccalaureate degree completion initiative designed to allow Hoosiers who are place-bound, time-bound, and resource-constrained an opportunity to obtain a college education without having to relocate to a four-year campus. Students obtain an associate's degree at a two-year institution in their community and continue through the upper division course work via distance education to complete a baccalaureate degree from ISU.

DegreeLink is envisioned to provide choice among 21 degree programs, which will be made available over a six-year period. This fall students have nine options from which to choose a baccalaureate degree-completion programs, ranging from technology to business to nursing to criminology. At an average of 20 upper division courses per program you can begin to appreciate the scope of our need to support faculty in developing all of the distance education courses.

As we began to work with faculty preparing for distance education teaching, we identified four categories of educational need and built a faculty development program around them. The most obvious (and easiest to address) was a need to become familiar with the technologies that could be used for distance education, including computer, video, and voice technologies. The second was a need to understand options for course design, particularly the strengths and weaknesses of synchronous and asynchronous modalities. Third, was a need to understand how the primarily non-traditional DegreeLink learners differed from the students present in ISU campus classrooms. And finally, faculty needed to learn about how to engage students in their own learning through structuring active learning experiences and creating community among a geographically disbursed class.

The result has been the establishment of the Course Transformation Academy faculty development program. The CTA effort is led by Continuing Education, who has partnered with several key entities on campus to develop and offer the program. These include the Center for Teaching and Learning, Media Technologies and Resources, Information Technologies, and Library Services. We also rely on faculty "pioneers," who discuss with CTA participants their experiences developing and delivering technology-mediated courses.

We have built the CTA around three main areas of interest:

- Instructional design-utilizing effective strategies that maximize learning
- Pedagogy-sound teaching principles for distance courses
- Technology-the proper selection of media based upon delivery

Instructional Design

The majority of faculty attending the CTA are there to find out how they can prepare their individual course for the distance education environment. Since this is their main desire they do not want to spend time learning "design theory". So at the CTA we do not present structured units of instruction on instructional design principles. Rather, we concentrate upon presenting well-designed units of instruction that incorporate sound instructional design principles.

As these units of instruction are presented the faculty are made aware of the five step process of the ADDIE model of instructional design: Analysis, Design, Development, Implementation and Evaluation. The ADDIE model is presented as a "tool" to help the faculty member in creating good instruction for his/her distance course.

Pedagogy

Since many instructors have never taught outside of the traditional classroom, we feel it is necessary to introduce them to different instructional models. These teaching models, and the strategies employed in their use, can serve as a "springboard," helping the instructor make the transition to the distance-based teaching environment. During this phase of the CTA we stress the distance "virtual classroom's" heightened need for interactivity, feedback and reflection. This is accomplished via presentations and instructional units that model good practices through exercises and experiences.

Technology

It is not the intent of the CTA to make faculty experts at designing and developing distance courses. Rather, it is our goal to make faculty aware of the many technologies available to help them get their instructional message to the student. As we all know, currently the big push in distance delivered courses is for Web-based courses. Many faculty have the mistaken impression that a Web-based course consists solely of (a) a reading assignment is given, (b) number of problems are assigned, and (c) students are expected to submit answers to the assigned problems. If that is the case then we have designed nothing more than an electronic correspondence course.

In many cases the distance student is removed from the classroom not only by physical distance but also by time. These constraints will make the distant student feel like (s)he is not only physically removed, but also mentally not part of the active class. Strategies for the selection of media such as; discussion threads, chat rooms, video and audio conferencing, instructional videos, and multimedia software, and the technologies necessary to incorporate their use, are discussed with an emphasis on how they can enhance the learning and help the student feel like (s)he is part of the class.

There is not space in this short paper to give specific examples of what goes on in the CTA. Hopefully, the accompanying presentation will clarify and give sufficient detail.

The CTA has now been offered seven times. Each time we have been responsive to the feedback we actively solicited from the participants. Based upon the feedback we have evolved the CTA offerings into:

- Web-based-asynchronous where all instruction is offered as on-line modules of instruction,
- semester bound-synchronous meetings for two hours each week in a structured classroom environment, and
- intensive one week-all day sessions offered during the summer.

Additionally, we offer intensive one day and two day workshops focusing on specific topics. These "update" workshops are designed to make faculty aware of innovative improvements brought about by changing technologies.

To date, we have had approximately 125 participants attend the CTA. Faculty members receive a $500 stipend for their attendance and participation. Once faculty members complete the CTA, they are offered course development support from a team of resource personnel, led by an instructional designer. Many of these media specialists, librarians, and designers provide component elements of the CTA

Biographical Sketches

Nancy Franklin is the Director of Planning and Faculty Development in Continuing Education/Instructional Services at Indiana State University. Her responsibilities include distance education faculty development, program and course development, assessment and marketing. She also represents ISU on three Indiana Partnership for Statewide Education committees: faculty development, marketing and copyright. Her background includes coordination of the Tech Faculty Development Institute and 13 years of telecommunications and computer marketing with ROLM and IBM.

Address: Erickson Hall, Room 127
Indiana State University
Terre Haute, IN 47808
E-mail: extfrank@ruby.indstate.edu
Phone: (812) 237-8452
Fax: (812) 237-3495

Don Kaufman is an instructional designer at Indiana State University with a background in electronics and computer technology. He actively works with many ISU faculty by assisting with the transforming of courses for distance delivery. Currently he is working on his doctoral degree in Instructional Systems Technology at Indiana University. Don is also an adjunct faculty member teaching distance-based electronics courses for the School of Technology at ISU.

Address: Erickson Hall, room 240
Indiana State University
Terre Haute, IN 47808
E-mail: extkaufm@ruby.indstate.edu
Phone: (812) 237-8687
Fax: (812) 237-3495

Web-Based Instruction:
A Comparison of Ten Programs

Dr. Scott Fredrickson, Associate Professor
and Director of Instructional Technology
University of Nebraska at Kearney

Various types of distance education classes and programs have proliferated during the past decade; however, one aspect of distance education technology that has certainly seen tremendous growth in the past four or five years is web-based instruction. Many college and university faculty have developed courses or course components for delivery to students over the World Wide Web. Most of these faculty have had expertise or interests that included developing web pages and web-based activities prior to commencing their development of web-based courses. Many of these faculty were highly skilled in using Hyper Text Markup Language or similar scripting and authoring programs. Many of these technology-using faculty enjoyed the creative aspect of developing their own web sites for use with their classes and were willing to expend the time and effort that was required to develop these courses. However, many other faculty did not and do not have the expertise, the time or the inclination to develop the requisite skills that were needed to create web-based courses. In the mid-1990s, web-based instruction programs started being developed by institutions and commercial establishments to address the need for faculty to create web-based courses without necessarily having to invest large quantities of time to learn scripting or programming. As more of the web-based instruction programs were developed, additional faculty began using them to deliver a wide variety of courses, from modern languages to social sciences to graphic arts. With the proliferation of WBI programs, many institutions are in a quandary concerning which program to use.

As the chair of the Academic Computing Committee at the University of Nebraska at Kearney, I established a subcommittee to examine various programs and to attempt to find one program that would be useful for all disciplines on our campus. The sub-committee had neophyte computer users to faculty who had taught for ten years using various distance education technologies. Our first task was to select four or five WBI programs to evaluate. After searching the literature, we settled on what we perceived to be the top ten programs that were available.

Each WBI program, which is included in this analysis, was used to the fullest extent in a demonstration setting. Several of the programs reviewed had full, working copies available for review, while some had specially created demonstration versions, but a few of the programs merely presented information about themselves. Some of the demonstration versions allowed the evaluator to interact with the program as the instructor/manager and as a student, while some simply allowed the evaluator to be a student. Obviously, the former model allowed the programs to be analyzed in more depth and detail than the latter models. The committee made two decisions that are worth noting at this point, prior to examining the WBI programs. The first was to not focus on price. Although price certainly will be a consideration when a WBI program is purchased, it was deemed unacceptable to allow price to color the decisions and evaluations at this initial stage. The second decision was that instructors must be able to use both major desktop platforms to create, manage and run the programs and students needed to be able to interact with the program regardless of their equipment. Several good WBI programs were dismissed out of hand due to that constraint. The WBI programs which were evaluated were: Serf, TopClass, Convene, FirstClass Collaborative Classroom, Learning Space, CourseInfo, Web Course in a Box, WebCT, ClassNet and Mallard. Each of the following sections will describe the program, key features, and perceived strengths and weaknesses.

Serf

Created by the University of Delaware, Serf is a powerful program. It allows five types of users: System Administrators; Administrators, who primary functions are to maintain various lists and objects and assigns "classes" to the instructors; Instructors, who can be given the option by the administrators to create and edit courses; Teaching Assistants, who have some, but not all of the privileges of the instructors; and Students.

The Serf program is colorful and attractive, powerful and has several good features. It has in-program e-mail, so faculty and students can interact without having to exit the program and go to their own e-mail programs. There are discussion forums, which allow asynchronous discussions to take place. It maintains grades, administers tests and has a built-in searching feature. The grades are exportable to most institutions' student information systems. A calendar allows the instructor to schedule events, announcements and the like. Serf allows the instructor to select different "look and feel" sets, including creating icons, names of items and so forth. Multimedia projects can be imported and displayed in Serf.

Summary of Serf

Serf is powerful and robust enough for all disciplines. It has all the features that a good WBI program should have. The drawbacks to this program are the multiple user ids and passwords, which are required, and it seems to run a little slower than most its peer programs.

TopClass

This is a nice, easy-to-use WBI program, but a number of problems prevent it from being in the top class of the better ones on the market. It allows announcements, e-mail, and discussion groups, which facilitates many student-to-student and student-to-teacher interactions. However, it does not have a synchronous discussion feature, whiteboard functions nor does it allow for students to have their own web pages as part of the program. It uses icons for student course navigation and lets the instructor control all aspects of the course. It does have a grading feature and allows for timed tests and student tracking, in addition to allowing students to have multi-course access. The instructor can set up "valid dates" so assignments and tests have to be completed during or before specified dates and times. The interface is very bright, colorful and very attractive.

There were a few problems with TopClass. The first is it is not very intuitive and this is another program with a lack of on-line directions. For example, if a user name with a space, such as Joe Bob, is created, the program simply indicates that an invalid character was inputted without indicating what the exact problem is. There is also a "create/edit course" area and a "create/edit class" area and no explanation as to the difference. Perhaps WBT Systems provides documentation or training upon request, but end users will need something like that to function properly or they will spend a lot of time spinning their wheels. I purchased a copy of TopClass from a grant project but did not receive any documentation with the program.

Summary of TopClass

It is a fairly easy to use system, from both the instructor's and the student's viewpoint. It is powerful and can provide most of the features one might want with a WBI program.

Convene

Convene is different than the other programs reviewed here. They provide a complete turnkey system, which runs the gamut from helping instructors convert their current courses to web-based courses to providing the server the courses run on. Convene has a variety of search tools, allows students to create home pages or profiles, as they are called in some programs. It has synchronous and asynchronous discussion ability, a whiteboard, student tracking, assessment and grading features and allows working in workgroups.

FirstClass Collaborative Classroom

The first time I had contact with FirstClass, they were a provider of electronic mail. Their WBI product, Collaborative Classroom certainly suffers and benefits from that heritage. This program is an outstanding conferencing and e-mail program, but falls short of what good or even adequate WBI programs should include. It has wonderful communication tools, it allows file sharing, and it has a very robust e-mail and synchronous and asynchronous discussions, but does not include a whiteboard component, which seems odd. It allows tracking of the history of a message, the creation of electronic forms and a search engine for electronic mail, however it does not have a grading component, a quiz or test section nor any assessment tools. When an instructor wants to have any content besides e-mail, such as readings, activities, or handouts, a web site must be developed. The instructor will have to work in HTML, or Java, ActiveX and the like. Not many instructors are going to want to invest the time and effort to create their own web site in this manner.

Summary of FirstClass Collaborative Classroom

As an add-on component to a traditional or distance delivered class, the e-mail, conferencing system is unsurpassed. As a self-contained WBI program, it is severely lacking even the basics of a good system.

Learning Space

Learning Space is one of the premiere WBI programs currently available. This program has everything. It has very strong collaboration and messaging abilities. It has built in templates, so instructors can essentially "fill in the blanks," scheduling database which links students with assignments, readings and quizzes, search tools, assessment tools, timed and dated examinations, a whiteboard and allows groups of students to be assigned to a team in order to work together on various projects. It maintains students grades and tracking, allows student to perform self-assessments and to create their profiles or homepages. Students can also create portfolios to store completed assignments and other items in. It allows scheduling of events by lessons or by date and has excellent content-sensitive help. The CourseRoom is an interactive, facilitated environment for asynchronous discussion groups, which can be either public or private.

Learning Space is owned by Lotus Notes, so all of the Notes interfaces and features work. One can spell check, change fonts, add color and bring in attachments with the same menu items and icons as are in Lotus Notes. Learning Space has a very attractive and colorful interface.

The downside of this program is it tends to be slower than many others and, for evaluations, there is not a "hands-on" demonstration one can try out. It is also weak in the multimedia creation department. In addition, the program needs synchronous discussion ability and an institution must have a Lotus Domino Server.

Summary of Learning Space

Learning Space is one of the top WBI programs currently available. It is very extensive and will meet the needs of almost all faculty, however, it is not terribly difficult to learn. If students access this program from non-networked machines, the access times are rather lengthy and it requires extensive hard drive space on the server. This is an excellent program.

CourseInfo 2.0

CourseInfo is another example of an outstanding program. It has an attractive, colorful easy-to-follow interface and the use of it is very intuitive. It has a hands-on demonstration version that prospective purchasers can use to create classes that the Classroom folks will allow to stay on line for a semester. It has a student created homepage section, synchronous and asynchronous discussions, test generation and grading components. It also has a built-in e-mail.

CourseInfo is the easiest to use program of its type that I have seen or worked with. Without documentation or training, novice faculty can be creating courses in 30 minutes. It allows instructors to select various color attributes and create very professional looking on-line courses, and allows the importation of previously created files.

One of the features of the discussion forums, which has not been found on other systems, allows students to have synchronous and asynchronous discussions with the entire class. Then they can enter into their "team areas" and have both features with just their other team members. They also have whiteboards in their team areas and in the whole class setting.

Summary of CourseInfo 2.0

This is another premiere WBI program. Due to its ease of use, the various discussion forums and colorful interface, it is without peer in web-based instruction programs.

Web Course in a Box

Web Course in a Box was developed at Virginia Commonwealth University. It has a colorful, attractive interface with announcements with a new announcement symbol that pops up when there is a new announcement, class information, a scheduling component, learning links and online help. It has an e-mail component, both synchronous and asynchronous discussion forums, a whiteboard, team grouping and allows filesharing. It also has assessment components, which allows the instructor to both create and administer various assessment items and to perform student tracking. It has a student sign in and out section to help the instructor monitor student involvement and a student portfolio and profile section.

This program has a tutor section in which students can ask and receive feedback on questions, problems and assignments. It also archives information for later use, if needed. The whiteboard has a variety of features built into it, such as ready-made graphing, formulas and the like. To assist in training on using the system, there is a presentation with streaming audio and something similar to PowerPoint slides, which presents lots of useful information and discusses the features of the program.

The Learning Link feature is a section that has links to instructor noted important data. It could be links to various web sites, or links to certain points in the syllabus. The Web Course in a Box also has five different templates from which instructors can select in order to create their classes: full screen without a border; half screen; list with and list without graphics; and, small graphics. It allows for extremely easy web-based instruction creation, custom icon selection and easy font substitution also. Like most WBI programs, the instructor can cut and paste from other applications into this one.

Summary for Web Course in a Box

This is another outstanding WBI program designed for minimal technology-using faculty. It is fast, clean, attractive and powerful. It allows very easy course creation, editing and managing and has built-in "training" on the product.

WebCT

WebCT is a program developed by the University of British Columbia for course material presentation. It is a full service program with everything one might require except for a whiteboard. It has both types of discussion groups, in-house e-mail, filesharing, student grading, automatic index generation, course content searches, student assessment, course use tracking by the instructor, external links to references and is multimedia capable. It also has a searchable image feature, a student self-evaluation component, a student presentation area, notetaking and page annotation abilities and team grouping ability.

A neat feature that has been missing from the other programs is a "tip of the day" which is presented when the user first enters the system. Many word processing programs and other applications use that feature, but it is the first time it has been included in a WBI program to the knowledge of the reviewers.

Summary of WebCT

This is a very powerful and versatile web-based instruction program. It is fairly easy to use and has many nice features. Currently, it is free to non-profit organizations, but may not stay that way.

ClassNet

ClassNet was developed at the University of Iowa. It has e-mail, synchronous and asynchronous discussion groups, and can keep statistics for the instructor. It does not have the "look and feel" of a professionally created program, but it does a very nice job of providing links to the information.

Summary of ClassNet

It is an inexpensive, first-generation WBI program that is easy to use and can do most of what beginning users of WBI will need to use. However, the current version is probably not powerful enough for long-term use or for experienced web-based course designers.

Mallard

Mallard is a product of the University of Illinois. When it was first evaluated, there were several problems that did not appear in the program when it was reevaluated. This indicates that the Mallard people are ensuring that the program is updated and includes many "necessary" features. Mallard is mainly text-based and simply does not have the robust look and feel that some of the other WBI programs do. It has an icon-driven interface, which is not very intuitive.

The interface is very attractive and is bright and cheery. It allows test generation and formulas to be used for answers, which is a unique feature. For example if the question was what is 21/7, responses could be 3, or 1+1+1 or 6/2.

Summary of Mallard

An interesting WBI program that continues to be upgraded and improved. It is very inexpensive compared to most programs, but has many of the features that are rapidly becoming requirements for such programs. It is not as robust and powerful as some other programs, but it is easy to use and can be used quickly by non-technicians.

Summary

Fortunately for faculty wishing to begin using web-based instruction, one no longer needs to be highly skilled and proficient with using authoring programs, scripting languages or designing web-based instruction. The current programs tend to handle the design factors, the scripting and the all rest for the instructor. Faculty simply have to input their content, resources and other data into the program and they will produce professional looking, effective web-based courses.

The pressure from the administration of higher education institutions to develop on-line courses is not going to decline. Indeed, several institutions have already set goals of having a certain percentage of their classes being on-line by a specific date. As more administrators come to understand the additional student markets that are reachable via the web, additional pressure will be put on faculty to convert their courses to this medium. With the fine web-based instruction programs available to faculty now, that conversion will be easier and the product will continue to be outstanding courses.

Biographical Sketch

Scott Fredrickson is an Associate Professor of Education and the Director Instructional technology for the college of Education at the University of Nebraska-Kearney. He received a Bachelor of Science in Criminal Justice in 1975 from the University of Nebraska-Omaha. Returning to Texas, he was a deputy sheriff until 1980. He taught geography/history and computer science in the Lubbock Independent School District from 1980 until 1988. He received a master's in Secondary Education and a doctorate in Instructional Technology form Texas Tech University in 1983 and 1988 respectively. In 1988, he had a dual appointment as an Assistant Professor in Computer Information Systems and in Education at the University of Alaska Southeast in Sitka. In 1992, he assumed duties at UNK. He is currently the chair of the Academic Computing Committee, the COI Instructional Technology Task Force and the COE Graduate Committee, in addition to being on various regional, state and university committees. He authored 15 articles for referred publications, co-authored three books, and has numerous presentations at the local, state and national levels.

Address: College of Education
University of Nebraska at Kearney
Kearney, NE 68849-1260
E-mail: fredricksons@unk.edu
Voice: (308) 865-8833
Fax: (308) 865-8097

The Care and Feeding of an Online MBA Consortium: The Texas Experience

Corbett Gaulden, Jr., Associate Professor of Marketing
University of Texas - Permian Basin
Co-chair, MBA Online Academic Affairs Committee

Dr. Darcy W. Hardy, Director
The UT TeleCampus
www.telecampus.utsystem.edu
The University of Texas System

Jennifer Rees, Communications Coordinator
The UT TeleCampus
The University of Texas System

Innate recalcitrance, inherent surliness, polished obstinacy, absolute disregard for order, - the very subject matter of chaoticians. These terms sound like a catalog of characteristics we associate with those "other" university professors. Our faculty, of course, are perfectly normal. Let those characters get away from our campus and the characteristics ascribed are often intensified considerably. So it would seem.

A couple of years ago the idea was born inside The University of Texas System that it might not be so. Perhaps faculty could work together on a broader scale than had been envisioned before. Collaboration in distance education on the Internet began to be a topic of conversation, then a dream, and now, a reality.

At this time, that dream is about to be launched with the deployment of seven fully web-based courses, with nine more to be launched by the fall of 2000. And, it was done by eight independent academic components of The University of Texas System.

The authors thought it would be interesting to discuss how we got here. Furthermore, what we have learned along the way might be of interest to others who might contemplate such a project in the future. We intend to acquaint you with the U. T. System and the motivations and methods of the program we now call the MBA Online.

Overview of the U. T. System and the UT TeleCampus

In 1876, the legislature of the State of Texas saw to it that the state constitution authorized the establishment of The University of Texas. It took a bit of doing, but by 1883, the first component of what we now know as the U. T. System was under way in Austin under the name, The University of Texas. About eight years later (1891) the Medical Department (since renamed the Medical Branch) was started in Galveston.

Over the years, a number of other legislative actions created more academic and medical/health science institutions within the state. A series of consolidations and new creations over the years has produced the current system of nine academic, and six health-related, institutions. In the fall of 1998, the U. T. System was academic home to almost 147,000 students at the fifteen components. Over 15,000 faculty provide academic instruction to these students.

As we all know, telecommunications and education have been on a collision course for decades. In fact, over the years, considerable adaptation of technology to the needs of students and faculty has occurred. As simple a matter as "voice-mail" has greatly enhanced the ability of the faculty member and student to "find" one another when need arises. Distance learning has provided a way to combine these various telecommunications systems to deliver educational programming.

No stranger to distance education initiatives, the U. T. System has been involved in satellite, television, audio and video conferencing throughout the last two decades. The nine academic and six health-related component institutions each possesses unique opportunities to utilize technology as a tool in reaching students previously unavailable. The U. T. System has had in place an extensive telecommunications backbone interconnecting its 15 campuses. System-wide use of the Internet for teaching, publishing, administrative communication and research continues to expand, increasing the demand for efficient high-speed networks. The need for a central, collaborative support structure to facilitate distance education and information technologies became increasingly apparent.

To address these and other information technology concerns, the U. T. System hired Andersen Consulting to help devise a road map for the future. Addressing the use of information technology in both residential and distance learning programs, the firm filed their findings in November of 1996. Andersen's report and the obvious attractiveness of telecommunications technology to the academic community resulted in the formation of the U. T. System Office of Telecommunications and Information Technology in November 1996 under Vice Chancellor Mario Gonzalez.

At the May 1998 meeting of the U. T. System Board of Regents, a special function of the Office of Telecommunications and Information Technology was unveiled. At the Regents' meeting, the University of Texas TeleCampus (UT TeleCampus, or simply UTTC) was announced by Board Chairman Donald Evans and Chancellor William Cunningham. The TeleCampus is a virtual campus (http://telecampus.utsystem.edu) dedicated to support services for distance education students and faculty within the U.T. System. It is comprised of eight virtual buildings (Registrar, Student Services, Library, Classrooms, Faculty, K-12, Information and Commons) which house various departments similar to those found on a traditional campus. Some of the TeleCampus resources include an online course schedule, digital library services, online bookstores, learning and instruction resources, chat rooms, links to important information at the component institutions (such as admissions, financial aid, registration), and much more. Resources are updated on a regular basis as they are discovered or created. The campus also includes an online course construction tool that allows students and faculty to access course information such as syllabi, "lecture" material, tests and grades through the Classrooms Building.

The MBA Online Concept

During the same time period, discussions within the U. T. System began to focus on system-wide distance education possibilities. The presence of the technology, the existence of the student and faculty distance education support unit (UTTC), and the activities of faculty members all over the System were viewed as fertile ground for larger-scale and more collaborative efforts.

At a June 1998 meeting of the deans of the U. T. System business schools, System Chancellor William Cunningham broached the subject of a collaborative MBA program to be delivered via the Internet. The deans responded in the affirmative and the decision was made by the Chancellor to proceed. Very quickly, a request for proposals was issued to the U. T. component institutions. After some discussion and after a variety of proposed configurations were discussed, the basic plan for program participation was developed. This plan resulted in course development and delivery participation by eight of the nine academic components in the U. T. System. The sole non-participant is U. T. Austin, as it has chosen to focus on its on-campus Executive MBA program.

Making the MBA Online Happen

The business school deans decided that the program would consist of sixteen 3-semester hour courses, for a total of forty-eight hours. The sixteen courses would be divided among the eight participating institutions at the rate of two courses per campus. The proposal also called for a two-year course development phase. In each of the two years, each component would develop one course. Finally, the proposal included a list of the sixteen courses and which eight would be developed in the first year. U. T. System Administration, through the Office of Telecommunications and Information Technology, would sponsor the development of courses by providing funding for training, faculty release time and production assistance at each campus.

In July 1998, the business deans and faculty representative of the eight participating components met to get things started. Some basic principals of procedure and operations were developed in that meeting. This allowed the deans to begin the process of surveying faculty for their interest in being involved. Within a period of weeks, the initial set of courses and faculty was identified. By this time last year (1998), the overall plan for what was about to occur was in place. Deans had a sense of what their institutions were expected to accomplish, courses and faculty course developers had been tentatively identified, and the TeleCampus staff began preparations for training and outlining a course development schedule.

As is the case in any partnership venture, regardless of whether it is a partnership within the U. T. System or not, System attorneys became involved early on. The goal of involving the attorneys was to protect 1) the faculty and their rights to their intellectual property, 2) the U. T. component offering the course or courses, and 3) the U. T. System Administration as it was providing the funding for development. Once the joint formal proposal was approved, it came time to execute contracts in such a way that all parties were individually responsible while maintaining the collaborative flavor of the undertaking. Even as faculty began working on their courses, a new contract had to be developed to address the above concerns. It then had to be negotiated with the designated course writers (i.e., faculty) and signed by all parties. Although some contracts had to be adapted and changed in various ways, once signed, the funding from U. T. System was sent to the appropriate components.

In the period while all this magic was taking place, the administrative apparatus began to take shape. Two oversight committees were formed. One committee was composed of the business deans of the eight components, and was styled the MBA Online Executive Committee. This group was charged with the administrative oversight of the program, including policy setting and administrative clarifications. The second committee, the MBA Online Academic Affairs Committee, was composed of two faculty representatives from each of the eight campuses. This group would handle the normal academic oversight responsibilities primarily focusing on program content quality, and faculty and student selection. The TeleCampus also played a crucial role as a "committee" in that it was charged with the implementation of the program, from training and development to delivery and evaluation.

Finally, on December 11, 1998, the faculty involved assembled at U. T. Arlington for an orientation, initial training on the use of the courseware construction set utilized by the TeleCampus, and to get to know one another a bit. It became clear to at that session that a number of fairly unique approaches to course development were already emerging. Each faculty member had ideas about how to take a traditionally delivered course and adapt it to online delivery. Some faculty realized quickly that some things might work, some might not. Not all faculty adjusted to this new approach as easily as others did. During the months of development, faculty learned that they could indeed change their style of teaching online while still keeping their unique approach to working with students.

On January 4, 1999, the Academic Affairs Committee (MBAAA) met in Austin and began the formidable process of working out the details of the program as they related to content oversight. At that meeting, the co-chairs of that committee were elected. Some initial policy and scheduling matters were settled, and a videoconference meeting schedule was established. The MBA AA Committee would meet once a month by videoconference throughout the development process.

As contract negotiations between faculty and U. T. System continued, faculty members began to develop courses. Committee members, faculty and UTTC staff began the process of working together at a distance. This process allowed all involved to have a sense of what it would be like to work with students at a distance. In some cases, faculty moved very quickly into the development phase of their courses. The TeleCampus staff worked via e-mail and telephone to assist faculty in whatever way possible. However, as with all projects, some individuals did not get started until well into the development period. Stress was felt by all involved in those situations.

The Executive Committee eventually elected its chair and communications opened between the two formal committees by way of the chairs. Scheduled videoconferences ensued, a joint face-to-face meeting was held, and a formal planning retreat of the three chairs took place in an effort to clarify policy and procedure. Campus-level changes in policy and procedures were undertaken to make room for the new approach to program delivery. Graduate Councils at each campus approved course syllabi and faculty in order to allow the transfer of courses across the System. Each campus determined its level of participation in the program as well as how the degree would be listed on the various diplomas. Faculty members were writing course content. The TeleCampus was in the midst of its MBA Online marketing campaign. The spring of 1999 was a very busy time for all involved.

On June 14-15, 1999, the Academic Affairs and Executive Committees held another joint meeting to wrap up a number of issues including advice to faculty before course deployment. By this time, one course had been moved out of the fall 1999 deployment schedule to a spring 2000 deployment. The course had also changed locations to another campus. This was another very busy joint meeting. All joint meetings had full agendas and it continues to be a struggle to get everything done in a short period of time. However, it was critical to bring these groups together for face-to-face discussions. Even in this age of technology, we recognized the need for traditional meetings at times.

What We Have Learned

It is clear that everyone involved in this project has learned *something*. For some faculty, it may be a whole new way to deliver instruction or a new way to collaborate with other faculty. For other faculty, it may be a realization that this type of teaching/learning/development is not for them. For the most part, however, it has been an awakening of sorts for all faculty involved.

The TeleCampus and the U. T. System Administration has learned a lot about how to make these kinds of programs work. We've learned how to better work with faculty and what mistakes not to make in the future.

In these closing paragraphs, we'll share some of the traumas, debates, and so forth. In that way, perhaps you can pick up on what we learned. While we made mistakes, we also did a lot of things the right way. For instance, we put a support center in place via the TeleCampus before development began. The U. T. System provided funding to help offset the cost of faculty release time and production assistance. We also had the involvement of all key people necessary to make this happen.

So, where did we make mistakes and what did we learn from them? Here they are in no particular order.

On the matter of contracts, we learned to provide all future course writers with one standard contract, period. In the first phase of the project, UTTC staff and System attorneys allowed a fair amount of flexibility in specific stipulations in the individual contracts. While the goal was to make the faculty member more comfortable with the contractual agreement, this proved to make the process of getting contracts in and signed a very laborious process for all involved, particularly U. T. System.

When it comes to course execution, we learned that a fairly narrow range of options for course development and deployment is probably a pretty good idea. In other words, it was better to have one courseware template rather than eight different approaches. Implementation, over the wide range of instructional strategies taken in this first round of course development, has resulted in a great deal of individuality and academic freedom for faculty members. However, it has also resulted in excessive difficulty in handling logistics from a staff perspective, as well as from a committee perspective. However, by allowing a variety of strategies to occur with faculty that were not necessarily familiar with online teaching, we were forced to move one of the courses from institution A to institution B late in the first phase. As a consequence, that course will not be deployed until spring 2000 rather than fall 1999 as planned. This is not a major problem, but the decision to move the course and resolve other related logistical problems took time that could have been spent in other, more productive ways.

We've learned a lot about oversight. Because it was the first year of the program, the oversight mechanisms may be a bit clumsy, but they do insure faculty oversight. We will have to better organize and set firm schedules over time, but the concept of having an Executive Committee and an Academic Affairs Committee worked fairly well, if somewhat sporadically. Along with that, we have quite a body of policy, designed largely to allow for local campus autonomy in a collaborative effort. This may be the most highly overseen program in academia today. The policies that are now in place as a result of this program will set the model for all other programs in the future. The growing pains of setting these policies for the MBA Online will result in higher quality online programs yet to come. In the experience of the authors, such depth of oversight, and the involvement of so many people in that oversight is unprecedented.

We've learned that it is hard both to keep such a collaborative effort together and to make it work fairly well. The program was received on the various campuses with a whole range of enthusiasm and skepticism, from one extreme to the other. As time has passed during the development of the program, some minds have changed while others have not. Preservation of local program flavor while accommodating this joint effort has been a major effort.

We've learned that a lot a variability exists in the possession of resources to get such things done at the campus level. While the TeleCampus provides one-on-one faculty support, some of the production assistance must come from the institution developing the course. A few of the U. T. components are fairly well equipped to undertake such course and program development. Others are poorly equipped and had to invent things as they went along. Some were very flexible and some were essentially inflexible. As you might expect, it is our perception that politics flavored these phenomena quite a bit. In this context, we learned that the more lead time you can provide, the better the results. At the same time, we confirmed that many faculty members perform best when they are almost out of time. Unfortunately, rushing through the development of a course may seem okay at the time, but the final result often looks the same. The TeleCampus staff stepped in at the last minute for a few faculty to help save their courses.

We've learned that there were many things we did not foresee. For example, accreditation issues associated with the American Assembly of Collegiate Schools of Business and the Southern Association of Colleges and Schools continues to be a very sensitive issue. Although efforts have been made to accommodate both organizations, the final approvals are still not resolved, as the issues are campus specific rather than soluble at the consortium level.

Finally, we learned that it is possible to pull various entities together for a common goal within a University system. Between U. T. System Administration and the UT TeleCampus, the faculty and the deans and presidents from each school, we learned how to have fun while trying to make an almost impossible thing appear to be easy and available to the world. The MBA Online is ready for fall 1999. For more information, go to the UT TeleCampus at www.telecampus.utsystem.edu.

Biographical Sketches

Corbett Gaulden, Jr. is Associate Professor of Marketing at University of Texas - Permian Basin and co-chair, MBA Online Academic Affairs Committee.

Address: University of Texas of the Permian Basin
4901 E. University
Odessa, TX 70762
E-mail: gaulden_c@utpb.edu
URL: http://www.utpb.edu/business
Phone: (915) 552-2202
Fax: (915) 552-2174

Dr. Darcy W. Hardy is Director of The UT TeleCampus, www.telecampus.utsystem.edu, the University of Texas System.

Address: University of Texas System
Ash 426
201 West Seventh Street
Austin, TX 78701
E-mail: dhardy@utsystem.edu
URL: http://www.telecampus.utsystem.edu
Phone: (512) 499-4213
Fax: (512) 499-4715

Jennifer Rees is Communications Coordinator for the UT TeleCampus, the University of Texas System.

Address: University of Texas System
Ash 426
201 West Seventh Street
Austin, TX 78701
E-mail: Jrees@utsystem.edu
URL: http://www.telecampus.utsystem.edu
Phone: (512) 499-4409
Fax: (512) 499-4715

Distance Learning Instructor Training:
A Simple Approach

John H. Gebhardt
Director, Instructional Technology & Telecommunications
John Wood Community College

Overview

I have evolved to a very simplified approach to teaching instructors on how to teach on our distance learning (DL) system. My current training averages one hour not including practice time by the instructor. In this presentation I will cover the techniques I use which have resulted in having over 25 faculty both full and part-time teach on our DL system - many of whom have taught on the system several times. The topics I will cover are: a description of our DL system; what we have done to replicate the traditional classroom as much as possible; what I have done to simplify the technology; what support we provide to ease the added burden of dealing with DL sites; what we cover with the student's taking DL courses; what I cover with the teacher as to their role in DL; some classroom management ideas; suggested plans in case of failure; some presentation ideas; and some suggested items to put in their syllabus.

A Description of Our Dl System

The DL technology we use at John Wood Community College (JWCC) operates on a bandwidth of 384kb (1/4 of a T-1) primarily using the VTel two-way compressed video/audio system over T-1 telephone lines. We opted to use 384kb so we can get three video/audio paths per T-1 line plus have bandwidth left over for voice and data to our remote education centers. JWCC's main campus is located in Quincy, IL on the western edge of Illinois right on the Mississippi River just 20 miles north of Hannibal, MO on what I call the western hump of Illinois. Our community college district covers over 5 counties with a population of slightly over 100,000 in a very rural area. We operate DL classrooms in our three education centers located 40 miles in different directions from Quincy. One center is in Pittsfield (a town of 4,000), one in Perry (at our Agriculture Center located near a town of 50), and one in Mt. Sterling co-located with the DOT Foods company (in a town of 2,000). We got involved in DL in 1994 with funding from a statewide telecommunications grant which allowed us to install in 1995 one DL classroom in Quincy connected to 5 other community colleges (located in the upper western area of Illinois), Western Illinois University, the Quad City Graduate Center, and CONVOCOM (the regional PBS Affiliate). Through this grant we formed the Western Illinois Educational Consortium (WIEC) one of 7 consortiums set up in the state of Illinois to serve the DL needs of our students. Since 1994, through follow on grants in our JWCC district, we have added 2 additional DL classrooms on our main campus, a DL classroom in each of our education centers, and one in each of three high schools. This fall we will be adding a private university and four more high schools for a total of seven high schools. With this effort we will have exceeded our goal of a JWCC student, not having to drive more than 20 miles to get to a JWCC class. Our enrollment in DL classes has increased every semester. In spring 1999 we brought in 10 community college courses from other colleges to serve 55 of our students. We originated 18 courses to our education centers serving

117 students plus we provided college courses to 5 students at our participating high schools that have just come on line. We were also able to bring in 4 WIU graduate courses to serve 17 students in our district saving them a 60-mile drive to WIU on two lane roads, in the evenings.

I believe the key element in DL is the instructor. I have taught over 25 faculty how to teach on the DL system, many of whom have taught several times on the system. Additionally, as an associate faculty member, I also teach a one-credit course "*Educational Media for ChildCare Workers*" each spring semester on the system. I am fortunate to have instructors who are willing to teach on the DL system in order to serve our district students. We also appreciate the fact we don't have a 40-mile drive to a remote campus to teach a course—especially at night, during a mid-western winter!

What We Have Done to Replicate the Traditional Classroom as Much as Possible

The very first thing I do is dispel the major fear among faculty that they will have to re-do all their course materials. I emphasize in my training you can use the same visual aids you use in your regular classroom in the DL room. We provide a document camera which can show overhead transparencies, 35mm slides, and/or the paper copies from which the overheads were made. Additionally, the document camera provides the instructor the ability to show items out of a book or any 3D item. This capability is something they do not have in their regular classrooms so it is a major benefit for them to have this capability. On a side note this capability has become so popular we have been requested and are in the process of installing document cameras and video projectors in many of our regular classrooms. We also use the document camera as the marking/black board. The major advantage here is when they write they are facing their students and some have pointed out they can pre-make what they want to cover. Additionally, we have a computer available for PowerPoint presentations, Internet access, CDs, or to show any computer program they wish to use. The DL system is also capable of playing videotapes and videodiscs.

What I Have Done to Simplify the Technology

I simplify the technology by re-making the template which came with the DL system (our system is a VTEL system). I covered up all but the essential items they need to press on the template. I labeled the six main buttons: Students, Instructor, Graphics, Videotape, Computer and MUTE. I show them how to adjust the camera but explain how they can use pre-set camera positions so all they have to do is press a pre-set button. Knowing how hard it is to concentrate on involving the distance site students in the class, I did not want them to be inundated with a lot of features they did not need to use to teach on the system the first time. If desired, I show them the rest of the features at a later date.

What Support We Provide to Ease the Added Work of Dealing With Dl Sites

I believe it is "critical" that clerical support be provided to DL instructors. My department takes care of getting all materials to and from the DL sites. I emphasize the availability of fax machines at all sites because, I know from experience, it is an invaluable aid in getting materials to and from students at the last minute. I encourage the instructor to get the materials to us so we can mail them to the remote sites before they are needed in class but, I "do not" over emphasize the point. I emphasize we can fax pop quizzes just before or during class. I make it as easy as possible to conduct class. I believe this is a key factor in getting instructors to teach and in keeping them teaching on our DL system. At the remote sites we have secretaries or senior workers available to assist in facilitating the transfer of materials to and from the sites.

What We Cover With the Students in DL

I accomplish the orientation to being a DL student the first day of class. I provide a handout on "Tips for having a successful DL experience" which includes: why DL is different that watching home TV; letting the instructor know if you have problems seeing any visuals; getting to know your fellow classmates, etc. I also include a description of how the technology works and I try to get the students at the local site to understand why using this technology is so important to students at the remote sites. If the instructor prefers, I operate the camera to show the local students to the remote sites during "getting acquainted" part of the first class.

What I Cover With the Teacher as to Their Role in DL

The points I cover are things we have learned from experience which help to make DL classes go smoother. I stress they are helpful suggestions— not requirements. I believe good instructors will incorporate most of these points anyway and providing them as helpful hints is a better way to present them. Here are some of the points I present to my faculty. *Get to know all students—local and distance sites.* Treat all students the same since all are taking the same class—it just happens some are 40 miles away. Some ideas to use are: having students fill out information sheets about themselves; have students interview their seatmate and then introduce this person to the class - note during this session the facilitator or instructor should zoom in on the students as they are doing the introductions. Having two students on camera at a time is less inhibiting. *During class discussions "show" local students as they talk.* This helps far site students identify with local students and equalizes the class. *Reinforce this is not "home TV" it is interactive TV and you expect the same attention as you would in a normal class.* This point is covered in the facilitator's orientation but can and may need to be reinforced by the instructor if it becomes a problem. *Encourage all students to be involved in the class.* Direct questions by site. I make instructors aware that local students will tend to dominate class discussion because of the audio delay caused by the technology. If ignored, the distance students especially traditional students tend to begin to feel left out and they can become lazy inattentive and sometimes disruptive students.

Some Classroom Management Ideas

Seating: I try to arrange the chairs so all can be seen. In a small class I suggest the instructor consider a seating chart to insure all students are seen better. Students will sit to the back of the room when given a chance. If front row is empty have everyone move up one row that way students in the back row are still in back but one row closer. *Equalizing Sites/Students* One idea for calling on students equally, is to have a sheet with sites (including the local site) and mark or move an object around to each site to remind you which site to call on next. *Audio Uniqueness* I explain the audio works like a CB or two-way radio. When one person is talking it cuts out the audio from the other person. I also explain that it actually forces a person into being courteous. If you think about it if both people are talking who's listening? I also explain that the MUTE should be on at the beginning, during breaks, and at the end of class so side/personal conversations are not heard at either end to avoid any embarrassing situations. I also explain we have a phone in every classroom if the instructor wishes to have personal conversations with a student at a remote site.

Suggested Plans for Failure

If desired and appropriate, the instructor may want to have a plan for what to do if the system fails. If appropriate, small group activities could be sent in advance and if the system were to fail they could be working on a project till the problem is resolved. I stress the failures are limited, but it is a good idea to be prepared. I explain that all our classes are taped with the instructor having full control over the tapes. In the event of a system failure the instructor can continue class and a tape of the class is sent to the distance sites for students to view to catch up. I emphasize the taping option has three major advantages. If a student misses, the instructor can have the students watch the tape to catch up. If the instructor is going to miss a class, they can pre-tape their lecture and we will play the lecture back at the appropriate time. And finally, if the instructor has a guest who is hard to get each time the class is offered the class tape can be saved and used in a later class—with the guest's permission.

Some Presentation Ideas

Framing I suggest they frame themselves like they see on the TV news at home. This makes them more personable to the remote students. I show them the pre-sets, which are designed to frame them in this manner. I also show them a pre-set, which allows them to wander if they are that type of instructor. *Vary Image* I show them how to change the camera from the document camera, to themselves, to the computer, and/or to play videotapes. I suggest they consider varying what they show to break up what the student sees. If all the student sees is the visual aids they will become disinterested. I stress it is helpful to the distance sites if the instructor shows the local students when they talk. *Visual Aids "Rule of Thumb"* I point out if you write or make a visual aid try to use a simple rule "3-5 words per line and 4-6 lines per page." If you do this all your visual aids in all you classes both DL and otherwise will be readable by all students. *Accountability* If you use a videotape make students accountable by having them look for key points. An effective way to do this is to provide a handout with these key points. If possible leave time to discuss video after it is shown.

Some Suggested Items to Put in Their Syllabus

Some things to consider putting in the syllabus besides the normal are: the seating requirement if you plan to use it; an explanation that deadlines for assignments are according to when they are turned into the remote site—not including mail time to you; and your policy on dismissal if conduct is disruptive to other students.

Summary

Some final thoughts. What has worked for me is I try to keep the training simple and short. Unless the instructor wants to take a 1-credit course in teaching on the system (a syllabus is available), I try to keep my remarks and demonstration of the technology to 1 hour. I then invite them to play with the "buttons" and suggest they return with a lesson they will be teaching to practice using the technology. I make myself available if they want my assistance. I also attend the first class providing helpful assistance when needed. I also suggest they explain to the students they are new to the technology and that they ask the students up front to "forgive" any mistakes. I suggest they laugh at themselves if they make a mistake "make light of it" and move on. Whenever possible, I "cover up" any buttons which are not used by the instructor. And finally, I provide as much clerical support as possible to keep the added burden of dealing with the remote sites to a minimum.

Biographical Sketch

John Gebhardt is the Director of Instructional Technology and Telecommunications at John Wood Community College, Quincy, Ill. He has a master's degree in Educational Media from the Univ. of Wisconsin-LaCrosse. He has presented several times at the Association for Educational Communications and Technology (AECT) conferences on subjects related to distance learning and visual presentation techniques. Has worked in the communication and education field for 25 + years: military visual communications (25 years), at a hospital, a 4-year college and two community colleges (combined total of 16 years). John has been involved in the development, facilitation and delivery of Distance Education for 10 years at John Wood with a specific emphasis in two way compressed video for the past five years. Additionally, has taught the course EDU 151 *Educational Media for ChildCare Workers* on the Distance Learning System several times.

Address: John Wood Community College
150 S. 48th St.
Quincy, IL 62301
E-mail: gebhardt@jwcc.edu
Phone: (217) 224-6564-4512
Fax: (217) 224-4208

Effective Survey Instruments for Evaluating Distance Learning Implementation Within Government Agencies

Marcia Gibson, Ed.D, Director, Training Group 1
Star Mountain, Inc.

Timothy A. Brown, MBA, Senior Training Analyst
Star Mountain, Inc.

DHHS and AMED Studies

Purpose

The U.S. Department of Health and Human Services (DHHS) study examined distance learning as a viable means for providing training to its employees. Research was conducted to determine what other organizations are using distance learning as a training medium, what equipment is required, what media is required, and what training development and implementation considerations must be examined. The Army Medical Department Center and School (AMEDDC&S) Center for Health Education and Studies requested an assessment of Distance Learning Programs both nationally and internationally to identify model programs which have potential for affiliation with the AMEDDC&S.

Indications. Many government agencies, with the use of state-of-the-art equipment and facilities —including the use of satellite downlinks and uplinks—are incorporating distance learning into their programs. Most departments within the major agencies have implemented and/or are planning to upgrade their distance learning programs. State governments have also implemented distance learning programs in cooperation with their respective universities and hospitals. Most have established programs partnering with corporations and the private sector.

Factors. Although technology plays a key role in the delivery of distance education courses, educators must focus on instructional outcomes. The delivery method falls into voice, video, data, or a combination of these. But, the key to effective distance education is to keep in mind the needs of the learners, the requirements of the content, and the constraints faced by the teacher, before selecting a delivery system. This will result in a mix of media, each serving a specific purpose.

Approach

A two-pronged approach was used to research the distance learning situation for DHHS and AMED. First, a review of applicable media was made to identify what was best suited for the organizations. Results of the research were tabulated into categories suitable to the study. Next, a survey was distributed to identify existing capabilities and needs within DHHS and AMED. Survey results were tabulated. Recommendations were provided to DHHS and AMED.

Data collection. A thorough media review was conducted by the Star Mountain project team in an effort to find the most recent, relevant, and timely information about distance learning technologies. The project team focused primarily upon information made available on the World Wide Web. A group of subject matter experts knowledgeable in distance learning initiatives in government settings was selected as the initial target audience for the DHHS Distance Learning Survey and AMED study. Eight agencies within the DHHS were selected for review. One or more individual from each agency was selected to receive the survey and, if necessary, distribute it among staff members knowledgeable about the subjects addressed therein. A survey instrument designed by Star Mountain was used to collect data on existing distance learning technologies in use at the various universities. The survey was conducted over the telephone with various educational institutions that were picked for their medical distance learning programs. The data was then compiled into a series of result tables. A small group of universities with medical distance learning programs were selected as the initial target audience for the CHESMED Distance Learning Survey. Ten universities were selected for review. One or more individual from each agency was selected to receive the survey and, if necessary, distribute it among staff members knowledgeable about the subjects addressed therein.

Analysis: Research findings were categorized into six distinct areas of consideration:
Distance education: practices, concepts, trends, and research.

- Government distance learning resources.
- Telemedicine and health care initiatives in distance learning.
- Technologies: equipment, media, and delivery modes.
- Training initiatives: implementation and evaluation of distance learning programs.
- Web sites and book references.

For each reference a summary table was created listing the title of the reference, the author/organization, date of publication, URL, and a brief description of the contents.

Survey instrument. A survey instrument designed by Star Mountain was used to collect data on existing distance learning technologies in use at DHHS, AMED and other government agencies. The instrument was distributed to representatives of organization within the DHHS and to government and educational institutions. The data were then compiled into a series of result tables.

The following are representative survey questions:

- What distance learning programs do you have in your organization?
- What delivery methods are you using for your programs? (If yes to health sciences, concentrate on these.)
- Who developed the instructional materials for these courses? Who delivers the instruction, in the case of video/audio teletraining? Were the developers and instructors specially trained and, if so, how were they trained, to use distance learning media and methods?

- Do you intend to use distance learning to deliver clinically-oriented (hands-on) material?
- Are you using multi-media materials?
- Do you intend to evaluate student learning in distance learning programs, especially where practical skills must be demonstrated?

Results

Given increasing demands to "do more with less" and facing continuous pressures related to reductions in organizations, the Department of Health and Human Services and AMED had to evaluate how to train their employees. By training them quicker and cheaper by leveraging technology, computer systems, educational design and analysis, multimedia curriculum, and distance learning technology without sacrificing quality or changing proficiency standards needs to be considered.

Biographical Sketches

Dr. Gibson has over 23 years of experience as an adult educator/training professional. She has worked in academic, government, and commercial settings in both technical and management positions. Dr. Gibson was the Program Manager on three Distance Learning Studies performed for the Health and Human Services, Army Chief Education Systems for Medicine, and National Center for State Courts.

Address:
E-mail: mgibson@starmountain.com
URL: www.starmountain.com
Phone: (757) 838-2600
Fax: (757) 838-0066

Mr. Brown has over 25 years of experience in training and training administration from military and private industry. Mr. Brown has over six years experience in the private training industry, creating and presenting training products in paper, computer, and video media. He has performed needs analysis and provided statistical analysis of training environments for the Indian Health Services, the Navy Family Housing Management Institute, and the Corporate Education office of the Internal Revenue System.

Address:
E-mail: tbrown@starmountain.com
URL: www.starmountain.com
Phone: (757) 838-2600
Fax: (757) 838-0066

Web Initiative in Teaching: A Strategy for Faculty Leadership Development and Institutional Capacity Building

Kay W. Gilcher, Assistant Vice President and Director
Center for the Virtual University
University of Maryland University College

Margaret A. Chambers, Director, Institute for Distance Education and
The Web Initiative in Teaching Project
University System of Maryland

Introduction

The Web Initiative in Teaching (WIT) is an innovative approach to faculty leadership development for multiple institutions in a university system based on team collaboration and organizational learning. It results in the development and pilot delivery of web-based courses. This concrete process informs institutional decisions about how best to help faculty, how to foster better strategies for student learning and access, and what institutional procedures and policies are needed to support distance learning.

The initial WIT pilot project was launched in the spring of 1998 and will conclude in spring 2000. The project is designed to help small teams create and teach web-based courses that are completely time- and place-independent. Teams were selected on the basis of proposals submitted through the respective provosts, ensuring high-level visibility in their own institutions. The forty-five faculty participants were designated Distance Education Fellows by the Chancellor of the University System of Maryland.

The WIT pilot project consists of two week-long summer sessions, monthly face-to-face meetings, a computer forum to provide ongoing communication and resource sharing, and two organizational learning conferences. All eleven degree-granting institutions and two research institutes in the University System of Maryland are participating in one of the 15 projects that were selected.

Leadership for the Web Initiative in Teaching comes from the University System of Maryland's Institute for Distance Education, which is administered by University of Maryland University College. UMUC is the institution in the Maryland system with the greatest amount of experience in distance education.

Systemic Leadership Development Rather Than Faculty Training

The WIT pilot project does not have as its goal training faculty how to develop web-based courses. Each of the participating institutions is responsible for training their faculty in the tools and techniques for putting up web pages or building full courses within the institution's course management system. Rather, WIT is a leadership development program that stretches over a year and a half period of time and addresses different concerns at different times.

This approach was chosen in order to lay a foundation for capacity-building within each of the institutions and across the university system. Like many of its counterparts in the U.S., the University System of Maryland has been struggling with policies, institutional practices, and cultures that inhibit the growth of distance education. In the spring of 1997, the Institute for Distance Education sponsored a day-and-a-half policy symposium that raised visibility of distance education policy issues among the provosts, faculty and administrators and initiated dialogues that are continuing in systemwide committees. The WIT pilot project forces into the forefront some of the issues that are being carefully and painfully debated as real faculty seek the support they need to develop and deliver their online courses, such as a technical infrastructure, student services, recognition for their time and intellectual contributions, and the like.

Many of the Distance Education Fellows have already become involved in building their institution's faculty training and development programs for web-based learning. A group of particularly committed faculty has begun to establish a structure and develop criteria for cross-institution peer evaluation and peer mentoring.

The Team Approach

Courseware projects are being developed by teams, consisting of at least two faculty members and a Web-savvy instructional designer or technical assistant. The purpose of the team approach is to increase the intellectual resources in developing learning components for a new environment, to sustain peer feedback, to provide adequate local technical support, and to enhance an institution's Web development capability. Team-based course development also helps to surface assumptions and to make design decisions explicit, which lays the groundwork for future mentoring and leadership.

Many of the participants have found it challenging to work in a team environment. The differentiated roles and close collaboration mandated by team-based development require new behaviors from faculty who are used to working alone and being in complete control of their course development. The project director has been asked to consult with several of the teams on project management and group process issues. Among those who sought assistance are two cross-institutional teams, one involving faculty from three different departments and two institutions, and another involving faculty from undergraduate and graduate levels of similar departments at two different institutions. Their collaboration is yielding positive outcomes for individual participants—including support for one faculty member who has been given responsibility for her institution's distance education initiatives without the resources or network to carry them out, and recognition for another faculty innovator whose work was largely unnoticed in her own institution.

Peer Feedback and Peer Review

A hallmark of the first year of the WIT project has been peer feedback. From the initial peer review of each course's conceptual prototype through the development of course modules and previews, WIT participants have been asked to use criteria to peer-review each other's progress. The practice of criterion-referenced peer review has been so positive that the Fellows as a community are seeking funding to engage in more research and refinement of criteria. These practices will be incorporated into protocols for mentoring other faculty and for assessing the "scholarship of teaching."

The peer review process, however, was slow to take off. WIT participants came to the project with a wide range of experience with web-based learning and course design and many did not know enough to be comfortable critiquing other's work. In the summer sessions, some examples of web-based courses were shown and discussed and faculty were encouraged to identify instructional strategies that could be incorporated into their own course design. Several presentations and exercises were devoted to web-based pedagogy, but many of the faculty were oriented toward technology training and were not able at that time to see the sessions' value. As the teams got immersed in their own projects, they became more self-conscious about their design decisions and the basis on which they were made. Within the structure of the monthly meetings described below, the criteria were developed and applied.

Organizational Learning

Key to the project are structured opportunities for participants to share with and learn from each other, and with a larger community of educators. Monthly, day-long meetings of participants are being hosted by different institutions throughout the project. Two organizational learning conferences are being held—one in May 1999 focused on the courses and the development process and attracted over 250 people from around the system; the other, scheduled for May 2000, will focus on student outcomes. These activities and other project deadlines have helped to move the teams along and make their efforts visible.

The opportunity to visit sister institutions for the monthly meetings proved to be an unanticipated benefit of the project. The wide disparity in resources between the large research and professional universities and the small, historically-black colleges became evident and led to better understanding of the challenges faced by faculty from less well-endowed institutions.

The WIT web site is also a focal point for organizational learning. It contains a summary of the project and overall strategies, descriptions of individual course development projects with team photos, and previews of the fifteen courses. Other information will be added as it develops including criteria for peer evaluation of courses and research results.

Institutional Commitments

The institutional commitment and required support for the project teams was made explicit at the outset. The proposal process was developed to secure the institutional support needed for the successful development and piloting of a web-based course. The selection of the team was the responsibility of the institution through its Provost or Academic Vice President. Statements of support from the department, school/college, institution's chief academic office, and Director of Information Technology were a part of each proposal. Institutional commitments included the payment of workshop fees and expenses for team members, released time and/or overload compensation or other appropriate accommodation for faculty time, assistance in working out procedural or policy issues for Web-based courses, and access to technical resources.

The degree to which institutions honored these commitments—particularly the appropriate recognition for faculty time—varied greatly. Nonetheless, all but one of the original project teams persisted. The one that dropped out did so very early on because the faculty were assigned additional teaching responsibilities and the technical support person was moved to a new position. This level of persistence may well be a function of a new, highly visible, initiative. There are rewards inherent in being the first faculty to be named Distance Education Fellows by the Chancellor, and in having access to the Provosts and other decision-makers. It is doubtful that a second class of Distance Education Fellows could do as well without the full level of institutional support.

Conclusion

Half way through the project we ask ourselves, has it been worth the investment? To date, there has been less innovation in courseware than might have been hoped, but there has been more innovation around the development of criteria and strategies that relate to tenure and scholarship. The faculty have felt empowered and have taken initiative to expand the scope of their involvement to include peer mentoring of a new class of Distance Education Fellows and peer evaluation of courseware and online teaching. The goal of developing faculty leaders appears to be well on the way to achievement.

WIT Web Site: http://www.umuc.edu/ide/wit/
Course Previews: http://www.umuc.edu/ide/wit/previews.html
Projects/Teams: http://www.umuc.edu/ide/wit/projects/projects.html

Biographical Sketches

Kay Gilcher is assistant vice president and director, Center for the Virtual University at University of Maryland University College. The Center is a new initiative that provides focused research and development on web-based pedagogy and technology in support of UMUC's extensive online distance education programs. Ms Gilcher has held several positions of increasing responsibility during her 13 years with UMUC and has helped to shape UMUC's use of educational technology to serve students throughout Maryland and beyond.

Address: University of Maryland University College
University Blvd. @ Adelphi Road
College Park, MD 20742
E-mail: kgilcher@umuc.edu
Phone: (301) 985-7778

Margaret Chambers is the originator and director of the Web Initiative in Teaching. She serves as director of the Institute for Distance Education, a resource to the University System of Maryland community to foster the highest possible quality in the design, development, delivery and evaluation of distance education programs. Innovation in education and organizations has been a persistent interest of Margaret's throughout her career in higher education, government and private industry. Since the early 1980s, she has been focused on the impact of emerging collaborative and knowledge technologies on learning and work.

Address: University of Maryland University College
University Blvd. @ Adelphi Road
College Park, MD 20742
E-mail: mchambers@umuc.edu
Phone: (301) 985-7299

Fine Tuning Interactive Delivery for High School Students in a Rapidly Growing College and Distance Learning System:
A Student Readiness Approach

Ron J. Hammond, Ph.D.
Sociologist, Distance Learning Liaison,
Utah Valley State College

Utah Valley State College (UVSC) is located in Orem, Utah. Its student enrollments have been growing at an extraordinary rate over the last few years. When I came here in 1993 enrollments were about 10,000. In fall 1998 they exceeded 18,000. Estimates of future enrollments indicate a maximum of 40,000 by the year 2020, which will taper off slightly yet remain high. This enormous increase in enrollments results from two major factors: demographic trends and cultural motivations. The official state policy has been electronic delivery (as opposed to bricks and mortar). In that context, and with that growth has come many new opportunities for distance learning. It has brought very welcomed growth and expanded services, following similar national trends (see Blakesley & Zahn, 1993; Musial & Kampmueller, 1996; Parrot, 1995; PBS Report, 1993; Watkins, 1994; Whitaker, 1995; and Wilson, 1991). Today, UVSC offers 12 telecourses, 16 Internet courses, and 23 interactive courses at UVSC. Thousands of students take these courses each year and data indicate that the trend is increasing (Palmer, 1999). Since its first distance learning course offered in the early 1980s, UVSC has been committed to the use of scientific inquiry in establishing policy, procedures, and pedagogy. From UVSC's point of view the structure of distance learning fell into place with an amazing level of technological efficiency. But the function, especially the quality of the delivery has moved more slowly and has been problematic. Of special concern are the high school students who take interactive courses from their distant sites. For example, it became apparent that our high school learners were not experiencing the same learning experience as were the college (on-site) learners. Numerous comparisons of average GPAs by semester indicated a significantly lower average GPA among high school learners. Course evaluations also indicated that high school interactive learners were struggling to learn from a distant face that they watched on a TV monitor. Yet, these early assessments did not let us clearly see what was wrong and how to improve upon it.

In its early years, the basic assumption of the UVSC interactive learning delivery paradigm was that a traditional, lecture based college class was adequate for students within the classroom and would be for students who had access to that class, even through television. Another assumption was that high school advance placement and concurrently enrolled students could learn as well as college students, even through a TV monitor. Years later we have come to realize that both assumptions are erroneous. The national literature consistently directs distance learning programs toward student specific assessment, intervention, and modification in course delivery. These guiding principles, combined with our findings of consistently lower GPA's among the high school students, lead to the administration of a student survey, teacher survey, and readiness, pre-assessment questionnaire.

Methodology

We administered an open ended survey to all of the interactive students, college and high school, during Spring semester, 1998. Out of 751 enrolled students, surveys were completed by 626 students, approximately 83% response rate. The survey solicited information in the following content areas:

- Interactive learning experience—current & total number of interactive learning courses taken
- Demographics—gender & year in school
- Subjective evaluation of course—best and worst aspects of course
- Teacher evaluation—what like most about teacher and what you would have teacher do differently
- Student's approach to interactive learning course—what are 3 personal strategies
- Lessons learned—what would students do differently if they took another interactive learning course
- Subjective self-reported estimate of performance—write your expected grade

The survey was administered to the interactive students over a 7-day period. Data were content analyzed during summer of 1998. The findings from the student survey provided helpful insight into the current needs and issues pertaining to our interactive students. They allowed us to make other research decisions from an informed point of view. The following conclusions may be drawn from those findings: first, high school students value interactive classes more than college students. High school students have a deeper history with interactive courses and currently take more classes. Ironically, while high school students value interactive classes more than college students they do not perform as well as college students taking the same class. This may be because college students share the classroom with the instructor; because college students have more college experience; or because interactive courses are more like traditional college courses-lecture based. This may disadvantage high school students who are not fully weaned from the more nurturing high school learning environment.

Second, high school students self-select into interactive courses. They probably see the courses as a jump start to their college career which also fills their obligations for high school graduation. Many college students have no idea that they have signed up for an interactive class until they attend the first day. To them it is scheduling as usual. High school students were also more likely to report extra benefits from interactive classrooms, especially college credit. They also reported the same benefits from college courses that college students reported.

Third, high school students reported unique worst aspects of interactive courses, especially the feelings of isolation, scheduling, and difficulty of taking the course. For many high school students, they are new at college, or relatively inexperienced at it, and have to learn from a TV monitor version of the lecture. Forth, high school and college students share many similar perceptions as they relate to positive attributes of teacher; what they would change about the teacher; and their strategies for succeeding in the interactive class. Yet the high school students perform worse than the college students. We were lead at this point to survey the interactive teachers. How did their perceptions compare to those of the students?

During the Summer 1998 Second Annual Interactive Teaching Seminar, held at UVSC, teachers were surveyed (prior to seeing student results) in similar topic areas as the students. Fourteen teachers filled out the open ended survey and the results were compared and contrasted to the student results. Findings from the teacher survey coincide to a certain degree with findings from the student survey. Teachers also mentioned that basic student skills were essential to success in the course. Teachers lamented the distance and isolation towards students and had developed strategies to connect with them. Teachers also had very few ideas about how to improve their interactive teaching. They did like the technology and reaching out to more students but did not like the impersonal nature of it.

After having considered the findings from the student survey and compared them to the findings from the teacher survey, we began to wonder if the high school students were less ready for the rigors of college and distant interactive learning. We observed certain themes from our findings. These include: basic college skills, self-discipline, college rigor, paying attention in class, and a few other less pertinent issues. Could it be that our high school students are simply not as ready or prepared for our interactive courses? They are still high school students (and therefore not yet college students). They have to learn from a less nurturing lecture based pedagogical approach. They have to learn from an impersonal TV monitor and lack the nonverbal and class- room atmospheric nuances of the learning experience. They also are literally and sometimes mentally as far as 100 miles from the teacher.

If readiness is an issue in this scenario then we should be able to develop an instrument which allows both the teacher and the student to be made aware of this lack of readiness and intervene in some way. We consulted the Internet, national distance learning literature, and college success literature and came up with a 67 question Student Readiness Questionnaire (SRQ). This questionnaire is still in the developmental stages but it has already allowed us to look into the student's experience with more clarity. We anticipated the following 6 objectives by developing and using the SRQ: first, to increase student awareness; second, to provide teachers with a general estimation of overall class readiness, strengths, and weaknesses; third, to provide teachers with individual information about a given student's readiness, strengths, and weaknesses; fourth, to start and maintain the dialog of readiness and preparedness between teachers and students; fifth, to socialize students more efficiently into the "successful college student"role; and sixth, to facilitate institutional support for 1-5 above. The questions in the SRQ are ordered into five conceptual categories of readiness which are as follows: Questions 1-21= Individual readiness & student disposition; Questions 22-36=Classroom skills readiness; Questions 37-50=General student efficiency readiness; Questions 51-57=Technology user readiness; Questions 58-64=General college readiness; and Questions 65-67=Demographic questions.

Our first study of the SRQ was in fall 1998. It was administered to interactive students-high school and college. Each teacher was made aware of the study, its purpose, and intended use. Seven interactive day sections (day sections have the high school students) were given the SRQ. We collected 858 completed surveys from a potential pool of 1,002 students (representing an

86% response rate). Three of the sections were randomly selected as intervention sections. That is, we planned to run analysis using the SRQ results and then provide those results to the teachers. Those three teachers, in turn would take a portion of their lectures to address the uncovered weaknesses or strengths and try to elevate the student's readiness if possible. This part of the study did not come off as planned. After we ran the analysis we had a very surprising discovery. There were few significant differences between college and high school students in 5 out of the 6 conceptual areas in the SRQ. In fact our high school and college students looked very similar on their scores, with one exception, college readiness. Our high school students scored significantly lower in the area of college readiness. We openly acknowledge these methodological concerns and suggest that the preliminary findings be considered in light of them.

Confounding these results was as extemely high level of missing data. The SRQ is on the front and back of one page. We think that students had run out of interest by the time they turned the page. We are still in the process of standardizing and validating the SRQ. Future studies, those currently in the works, include the following: a population study of all interactive students in a given semester (with a reward for completion of the entire SRQ); a study pairing the SRQ with a psychological maturity scale, student high school GPA and student ACT scores; and a reworking of the original study with teacher intervention strategies.

Summary

Let's summarize the findings from the three research studies mentioned above and discuss some of their implications. First, high school students had more complaints about interactive learning yet, more compliments of teachers than did college students. Second, high school and college students could identify the importance of basic student skills needed to succeed in an interactive class. Third, high school students value interactive classes more than college students yet, do not perform as well as college students. Interactive classes are viewed as a jump start to high school students careers and also allow them to receive high school graduation credit at the same time. Fourth, high school students reported feeling isolated and finding the interactive course to be hard or challenging. Fifth, teacher feedback was similar to student feedback. Both identified the importance of having the basic student skills if students want to succeed in interactive settings. At one level, minimum basic skills help you to survive and at another, mastery of those skills help you to succeed.

Sixth, teacher efforts to engage site students were diverse and lacked a central theme. This indicates to us that we are all still new at this service and that our teachers, in their own unique ways connect with students as best they can. They should also have some level of commitment to interactive teaching in order to respond as they did. Seventh, interactive teachers face a dilemma of wanting interactive students and interactive teaching to succeed while maintaining the rigor of college learning. Eighth, both teachers and students like the technology and are pleased that it extends college to students who otherwise could not access it. Ninth, our findings lead us to question the preparedness or readiness of high school interactive learners. High school students should be as ready if not more so than college interactive learners because they will learn through a TV monitor at a distance from the teacher. We suspect that they are not as prepared and we are still working to establish or refute that claim. Tenth, our first assessment of the SRQ provided week and unreliable results. This study will be repeated and other studies will follow using the SRQ. Students, teachers, and administrators would greatly benefit by being able to pre-assess interactive students (or any other distant learners) and intervene as well as inform.

In conclusion, distance learning is the wave of the future, perhaps comparable to a mild tsunami in its timing and impact. It is uncharted teaching and learning territory which challenges students and teachers in many unique ways. It requires careful scientific consideration and attention, as it develops and becomes established. Our research over the last 2 years has been in the interactive teaching and learning arena, especially as it relates to high school and college students. We have followed the research process from basic assessment of students and teachers to the development of a readiness assessment instrument. We are still in that phase of the research. Very few instruments of this nature are found in the distance learning literature today. We claim that more need to be developed. Given the diverse experiences of Internet, telecourse, and interactive learning combined with the infinite diversity of students who are taking these courses, there may be a great deal of support for our claim.

References

Blakesley, L., & Zahn, S. (1993). *Reaching students through distance education.* (ERIC Document Reproduction Service No. ED 356 817)

Musial, G.G., & Kampmueller, W. (1996). Two-way video distance education: ten misconceptions about teaching and learning via interactive TV. *Action in Teacher Education, 17*(4), 28-36.

Palmer, Lori (1999). *Utah Valley State College distance learning report.* An unpublished executive summary presented to Administration.

Parrott, S. (1995). *The last of the handcrafted students: Issues of distance education in academia.* (ERIC Document Reproduction Service No. ED 392 470)

Public Broadcasting Service. (1993). *Report to the 103rd Congress.* (ERIC Document Reproduction Service No. ED 357 919)

Watkins, B. T. (1994). Uniting North Dakota: Three institutions offer complete degree programs on an interactive video network. *Chronicle of Higher Education, 40*(49), 17-19.

Whitaker, G. W. (1995). First-hand observations on telecourse teaching. *T.H.E. Journal, 23*(1), 65-68.

Wilson, C. (1991). *Trends in distance education: Available alternatives for higher education.* (ERIC Document Reproduction Service No. ED 337 081)

Biographical Sketch

Ron J. Hammond, Ph.D., is an Associate Professor of Sociology at Utah Valley State College. He has been teaching interactive for 5 years and telecourse for almost 3 years. He has served as interim faculty director of distance learning. He also serves as Summer Faculty Trainer (past 3 years). He has facilitate three consecutive interactive teaching seminars at UVSC and expanded the 1999 seminar to Internet teaching. He has performed two studies in distance learning. One study examined the consequences of putting a telecourse into a traditional classroom and its effect on student performance. The other study compared high school to college interactive learners. Both are available in full text in ERIC-microfiche.

Address: Mail Stop 115 at UVSC
800 West 1200 South
Orem, Utah 84058-5999
Phone: (801) 222-8344
Fax: (801) 764-7089
E-mail: Hammonro@uvsc.edu

The Virtual Teacher and the Classroom of the Future

Richard A. Harrison
Production/Program Supervisor
Instructional Television
San Diego County Office of Education

> *There is no such thing as educational television, that's the ultimate oxymoron.*
> *The ability to change what's on the screen is the tremendous empowerment.*
> Timothy Leary, 1993

The education process in America is now dealing with the children and grandchildren of the Gen X generation, whom Douglas Rushkoff in his book *Media Virus* describes as "the first generation of Americans fully engaged in a symbiotic relationship with media." The Gen Xers were born in the 1960s so they are approaching 40. They are the ones who re-defined and manipulated the media that present day children are joyfully swimming in, while many adults in education are treading water, trying to stay afloat.

Can this trend of more, faster media technology be changed? No, but it can be adapted and manipulated just as the media has manipulated everyone for years, or attempted to if you chose to feel superior to technology.

The challenge that presents itself to public education is how to blend effective teaching into this shifting technology and create a media rich learning space for media savvy and saturated students.

The mythology of the classroom has changed. It is not a place where students come for word or text. They are being raised, as were their parents, on images. Teaching evolved from the Socratic to text to image, and the virtual teacher in the classroom of the future will embrace this paradigm shift.

The teacher and the classroom will be one and the same in this future. Currently, there is much talk of, school reform in terms of charter, vouchers, home school and privatization, all which will still exist, but let's move to a space which will bring today's students together with a "virtual teacher." It doesn't exist yet, but it will and what will it resemble?

Consider the following 7 characteristics that may help define the **Virtual Teacher** and their relationship with the space: the **Classroom of the Future**.

Area 1 - Physical Space

There will be both a real and virtual space where students can gather. It may well resemble, for lack of a better metaphor, an upscale Sports Bar—filled with images and areas of activity and sound. There will be no fixed or assigned desks or chairs. Lighting will vary according to time, subject or function. Teachers will occupy a central hub position for observing, monitoring, selecting and channeling information to and from appropriate individuals or groups.

Walls and ceilings will be plasma screens that will become other environments or classrooms - Games electronic and real will be available. "Conversation space" for collaborative groups or single isolated areas can be formed. Everything, including the teacher's hub will be movable to provide for instant ebb and flow of not only people but also the presentation of information. Images will be everywhere and can be changed at an individual's discretion and control. Video cameras will monitor and record everything at the central hub—which will act as a server for both inter and intra net contact. There will be no rigid spatial organization. Space will change as the group or individual's needs change.

Area 2 - Learning Environment

This is an intangible concept, which influences and determines what will transform the raw material (students) into a finished product (same students). Educators know that a positive and productive traditional classroom environment consists of; open communication, acceptance and psychological freedom. In addition to this, the learning environment and the virtual teacher in the classroom of the future will also encourage cheating, failure and play.

Before I'm burned at the stake as a heretic, let's define these old and new terms. Traditional cheating is not allowed. It is a stigma—guard your work. Failure is also unacceptable—one is branded forever. Play is something one does at recess or on your own time. Imagine collaborative cheating—where new ideas trigger more ideas in an open atmosphere and anyone can use anything. Ideas that are likely to fail, but still shared and explored.

Fear of failure stifles experimentation and creativity. The climate of failure will not exist in the classroom of the future. Everyone will succeed at something on some level.

If something doesn't work admit it. Confront the errors, human or otherwise. Discuss the failures and you reduce/eliminate defensiveness or embarrassment. Remove failure and replace it with risk and adventure. Remember that play is a divergent activity. It is expansive, receptive and opens up possibilities. It has a serendipitous nature; the wonder and joy of surprise.

Work, on the other hand, is convergent. It tends to narrow the focus, imposing boundaries, limitations and tiny boxes of thought. As Jerry Hirschberg says in his book, *The Creative Priority*, "Creativity does not play by the rules, it plays with the rules" These are the new rules that the learning environment of the classroom of the future will embrace, encourage and reward; Cheating, Failure, and Play.

Area 3 - The Students

Media savvy students, with computers at home or in their backpacks along with cell phones and pagers are already information centers. Easily bored, increasingly cynical and exhibiting the range of Gardener's multiple intelligences. Some need a quiet corner; some a group give and take; some always moving from group to individual searching for an interest or challenge; some not even present. There will be virtual students at home and in the class. Some students may be participating from other countries, towns or parts of the school. All with a Personal Data Assistant (PDA) on their wrist.

Diverse, in ethnicity, interests, attitudes, abilities and dress. All swimming into the techno waters of one classroom. Teaching themselves and others; doing, making and learning. All participating in respectful meddling and tinkering with technology.

Area 4 - The Virtual Teacher

Who is in charge of this techno soup that is cooking? No one, in the traditional sense. The virtual teacher has several functions; a server; a programmer; a TV Producer/Director; an Ad-agency director; a media manager; and always a student. The virtual teacher is the media classroom. A living entity of media and people guided by several teachers some of who will be the students. The teacher will function best by encouraging questions not answers. They will facilitate initiative, spontaneous thinking, and create an environment of risks and friction, supportive of failure, smoothing stress and change. Always keeping everyone fresh, involved, stimulated and encouraged. The teacher is the center of the media classroom whose roll it is to support the techno space as it is shaped and re-shaped by the students. The term "teacher" may be replaced by Image Manager or I.M. As in "Good morning, I'm your I.M." as the recent MicroSoft^{TM} slogan goes, "Where do you want to go today?" They will focus on process not product (i.e., grades). In addition there will be other I.M.s from other locations, local, state and worldwide. Several I.M.s will be feeding information into the classroom either for individuals or groups. The I.M. will address student needs and interests as they roam throughout the media space. The I.M. will not be a robot. A human being is needed to provide the social skills and human based decisions for the related socialization process.

Area 5 - Grades, Evaluating, Assessment

How do you know students are learning? You may not, but they will. Because learning will be self evaluated. The technology will grade them, and the I.M. will monitor, acting only as a gatekeeper restricting access to some areas until certain skills are achieved. Social promotion is replaced by media-promotion. Play, curiosity and peer collaboration will create a feed back loop of self-rewarded learning and achievement.

Area 6 - Curriculum

Whatever the I.M. offers and students request while interfacing the basics and what E. D. Hirsch calls *cultural literacy*. The Virtual Teacher, or I.M., will monitor the source and flow of information, but not how it is gathered, processed, utilized or disseminated by the students. No curriculum subject will be time fixed, but cross-curriculum activities will be constantly available and interfaced as the students interact or activities dictate.

Area 7 - Funding

How is the future classroom to be paid for? The current education system method of funding may or may not be politically able to adapt, but eventually if there is to be a public accessible education system the bureaucracy will support it. The manufactures of technology will be a valuable resource of equipment and funding. The classroom will produce marketable products, or create new technology that will create income, because as Nicholas Negroponte of the MIT media lab states in *Being Digital*, "Copyright law is totally out of date. It is a Guttenburg artifact." But that doesn't necessarily rule out patent rights for new products that are yet to be created. So as students play they will create new products and their creations will become a revenue source.

In conclusion, let me confess that I hope I've raised more questions than I've answered, because as Hirschberg stresses in *The Creative Priority*, "The critical importance of creative questions before creative answers." Is the Virtual Teacher and Classroom of the Future science fiction today? Maybe, but not tomorrow. The Classroom of the Future will be image managed by the "virtual" teacher who creates a questioning environment that will stimulate and challenge diverse student population. It will happen because education cannot afford not to change. The new students of today must be addressed with regard to the world in which they were born and have been raised, and which they are changing.

Civilization is a race between education and catastrophe.
H. G. Wells

References

Gardner, H. (1993). *Frames of mind: The theory of multiple intellegences*. New York: Basic Books.

Hirschberg, J. (1998). *The creative priority*. New York: HarperCollins.

Negroponte, N. (1995). *Being digital*. New York: Vintage Books.

Rushkoff, D. (1994). *Media virus*. New York: Ballantine Books.

Biographical Sketch

Mr. Harrison holds a M.F.A. from Yale University and has been awarded three Emmys for producing and directing instructional television. He is the Production/Program Supervisor of the largest ITFS Cable System in the United States (over 450 schools as well as cable access to 850,000 homes in San Diego County). Mr. Harrison is an adjunct professor at California State University- San Bernadino where he teaches Creative Dramatics for the Classroom Teacher, Acting For Non-actors, and Mass Communications. Mr. Harrison serves as a consultant and trainer for District Superintendents and private individuals.

Address: San Diego County Office of Education
ITV Room 205
6401 Linda Vista Road
San Diego, CA 92111
E-mail: rahar@sdcoe.k12.ca.us
URL: www.sdcoe.k12.ca.us
Phone: (619) 292-3729
Fax: (619) 560-7653

Videoconferencing in K-12 Education: A Delphi Study of Characteristics and Critical Strategies to Support Constructivist Learning Experiences

Katherine L. Hayden, Ed.D.
Pepperdine University

Introduction

With the expanding infrastructure of technology and telecommunications in the world today, new applications of communications are emerging in our society. In order to succeed in the workplace of tomorrow, it will be necessary for students to have collaboration and communication skills using technology tools (Cannings & Finkel, 1993; CEO Forum, 1997; Schlechty, 1997; Mehlinger, 1995). "Schools must make all students adept at distanced interaction, for skills of information gathering from remote sources and of collaboration with dispersed team members are as central to the future American workplace as learning to perform structured tasks quickly was to the industrial revolution" (Rockman referenced by Dede, 1994, p. 35).

Videoconferencing has been used in higher education and businesses for several years and now is spreading to K-12 classrooms. Teachers tend to use new technologies within the context of their perceptions of instructional strategies (See Figure 1). For example, the instructionist teacher views the characteristic of videoconferencing that allows connection to a distant expert, as an opportunity for a remote lecture. On the other hand, the constructivist teacher views this same characteristic as an opportunity for students to ask questions and clarify meanings. Educational reform efforts suggest that constructivist teaching strategies and learning environments should be explored for student activities and assessments (Brooks & Brooks, 1993; Dixon-Krauss, 1996; Edelson, Pea & Gomez, 1995; Kamii, 1989; Means et al., 1993; Ravitz, 1995; Sandholtz, Ringstaff & Dwyer, 1997). In order to prepare teachers and schools for best practices using videoconferencing technology, constructivist instructional strategies need to be matched with new technologies. This paper will report the findings from a recent study that investigated these "best practices" for videoconferencing.

The Delphi process was used in this study in order to facilitate a panel of 32 experts in projecting their experiences with education, technology, and videoconferencing in order to identify important characteristics and critical support strategies necessary for videoconferencing in constructivist K-12 environments. Their recommendations can provide a guide for technology trainers and professional development planners in implementing effective teacher training and support. As one participant in the Delphi study stated:

I have been more conscious about what I've organized for teachers (VC project development) and in teacher trainings. I have stressed more active participation among the students. This has been very helpful for me; I have referred to the information/results from this survey several times in trainings. Teachers' ears seem to perk up when you have data to support your philosophies and different examples to give.

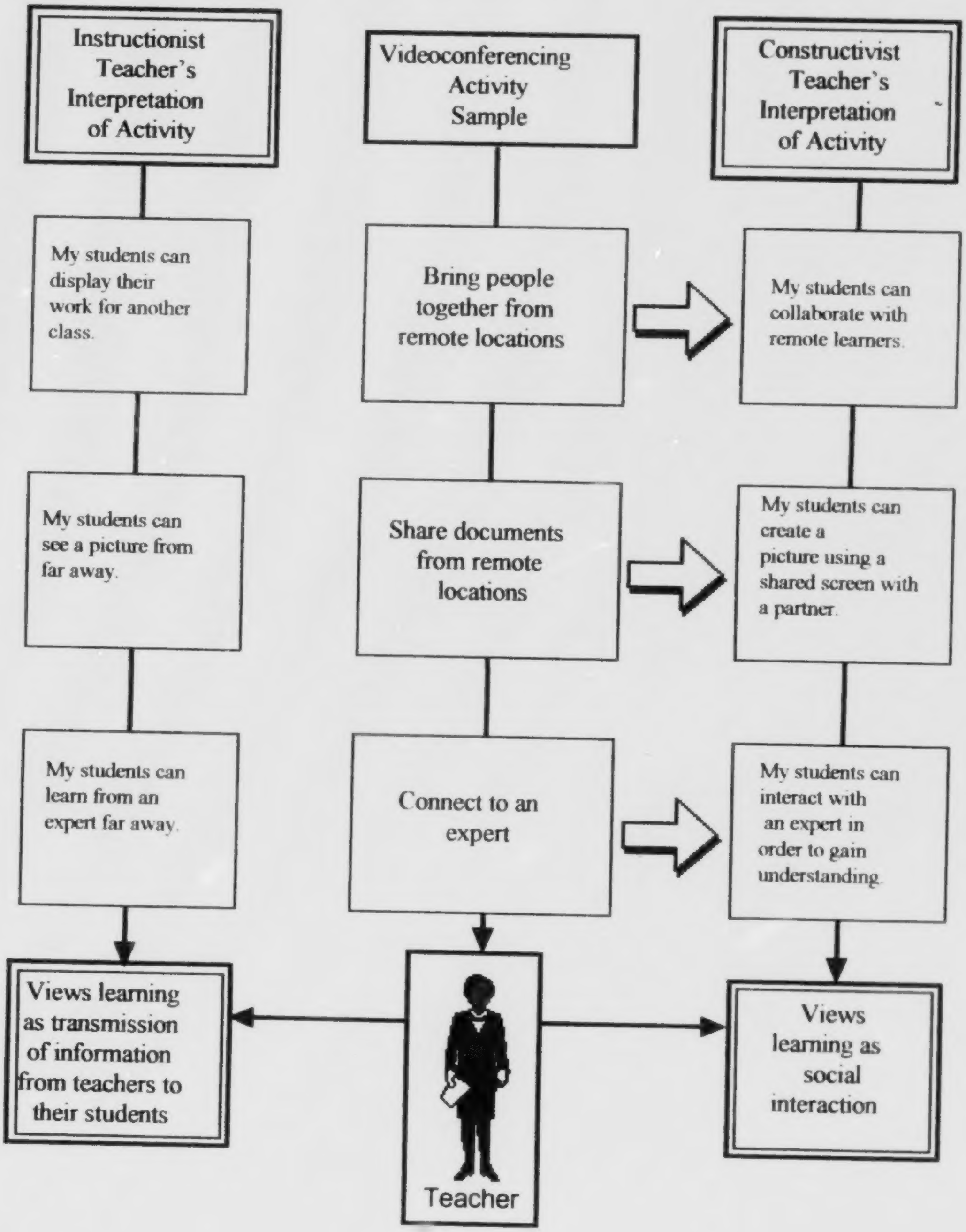

Instructionist Teacher's Interpretation of Activity
Videoconferencing Activity Sample
Constructivist Teacher's Interpretation of Activity
My students can display their work for another class.
Bring people together from remote locations
My students can collaborate with remote learners.
My students can see a picture from far away.
Share documents from remote locations
My students can create a picture using a shared screen with a partner.
My students can learn from an expert far away.
Connect to an expert
My students can interact with an expert in order to gain understanding.
Views learning as transmission of information from teachers to their students
Teacher
Views learning as social interaction

Figure 1. Teachers interpret videoconferencing through their perceptions of instructional methodology.

Characteristics of Videoconferencing

Twenty characteristics of videoconferencing that support constructivist learning emerged in the three-round Delphi study. These twenty characteristics could be categorized into four themes: (a) connections, (b) questioning, (c) learning, and (d) interaction. Within this list of twenty characteristics, ten characteristics of videoconferencing were rated higher than the other ten by participants. By organizing the top ten characteristics by theme area, learning experiences using videoconferencing to support constructivist learning can be planned. Table 1 shows how a videoconferencing project can incorporate all of the top ten videoconferencing characteristics.

Table 1. Planning An Activity Using The Top Ten Characteristics Of Videoconferencing That Support Constructivist Learning Environments

Theme	**Characteristic**	**Scenario:**
Connections	Synchronous connections between students and primary sources such as experts and remote locations; involving multiple sites in activities.	Students are assigned an authentic task that offers opportunities for planning connections outside the classroom with experts and primary sources such as museums. The students plan, develop and ask questions during a videoconference in order to collect information and gain an understanding of key concepts. The students use a suite of online tools as follow-up to the initial interaction and then present their findings "live" to remote partners concluding their research.
Questioning	Students develop and ask questions; they are in charge of their learning.	
Learning	Students present to remote partners using audio and video for communication.	
Interaction	Students work in groups on authentic activities with remote sites. This involves videoconferencing with remote sites and use of an online suite of tools to support videoconferencing activities.	

Talking head. The theme of remote lecture, sometimes referred to as "talking head," did not emerge in this study. This is interesting to note because so many of the videoconferencing activities in educational environments today include this videoconferencing characteristic. The linking of videoconferencing and constructivist strategies may have avoided the "talking head" characteristic. One participant expressed concern that "the 'staged' exercise [in videoconferencing activities] is taking precedence over the meaningful dialog that might be possible" when too much preplanning by teachers results in a script for students.

Shared electronic document. The characteristic of "students creating a shared electronic document using synchronous connections" was ranked 19th in the twenty-item list of videoconferencing characteristics. Although this characteristic was not eliminated from the study because of its high overall rating (81% of the participants rated it desirable or somewhat desirable), this characteristic seems to be a strong component of the future workplace according to the literature for business applications of videoconferencing. One participant suggested "more accounting for the various media that are used in VC, i.e. elmo, video tape, computer, whiteboard, etc. All of these can enhance the potential for constructivist uses of VC." With more awareness of the capabilities and terminology of videoconferencing, the ability to share electronic documents may become a useful videoconferencing characteristic for constructivist learning activities.

Table 2. Top Ten Critical Support Strategies for Videoconferencing

Theme	**Critical Support Strategy**
People	• Site technician to check out appropriate equipment, set up and test
Access	• Dedicated phone lines (T1) or other means of making connections
Hardware and Software	• Backup plans in case videoconferencing fails • Easy to use hardware and software systems needing little assistance
Materials	• Curriculum materials for videoconferencing activities that model students as active participants
Staff Development	• Teacher knowledge and comfort, with videoconferencing technology • Teacher training on how to adapt instruction/curriculum • Teacher (and students) hands-on practice with videoconferencing • Release time (during planning stage) for teachers to plan and/or practice videoconferencing.
Cost/Budget	• Administrative budget: plan for equipment upgrades

Support Strategies

The three-round Delphi technique identified critical strategies that support videoconferencing in constructivist environments. The Top Ten strategies for supporting videoconferencing could be categorized into six themes: (a) people, (b) access, (c) hardware and software resources, (d) materials, (e) staff development, and (f) cost/budget (see Table 2).

Conclusions of the Study

According to the findings of this study, constructivist learning seems to fit nicely with videoconferencing technology. The learning activities and characteristics that were submitted by participants indicated rich opportunities for students as active participants while using synchronous connections with mentors, experts and peers. Strong support for the "teacher as facilitator and collaborator" were identified.

Should textbooks drive curriculum or should student's prior knowledge determine curriculum? Participants could not agree in this area. Assessment was another area where participants did not reach consensus. Multiple choice tests are not the best measure of student learning according to participants, but teacher observation may not provide adequate assessment of student learning either. Educators continue to struggle with this area of the educational process.

Professional development emerged as a key area of support for integrating new approaches to teaching and learning. The focus areas for staff development were closely linked to the changing instructional methodologies and comfort with new technologies in content areas. "Time" was identified as a key element that is needed for teachers to plan and practice using technology. Providing adequate hands-on training in both videoconferencing technology and constructivist learning seems to be the key to effective support and training. Examples of curriculum applications with appropriate content for use of the tool of videoconferencing were also recommended by panelists.

Recommendations for Further Study

Recommendations for further study include (a) development of standards for implementation of videoconferencing activities that support constructivist learning environments, and (b) pilot programs using the videoconferencing support strategies and standards identified by the experts in this study.

With fiber optics and increased bandwidth, technology is changing at a very fast rate. Some of the findings from this Delphi study will become outdated as the technology and connections change and new possibilities evolve in videoconferencing. The findings of this study dealing with support strategies and methodology will continue to be useful in planning for implementations of new technologies and staff development.

Final Comments

The reasons for nonuse of computers were identified as the same as earlier technologies identified by Larry Cuban (1986): cost of equipment, not enough access to computers, not enough time to plan the curriculum fit and not enough training and resources. In 1995, the Office of Technology Assessment (OTA) reported these same issues for teacher nonuse of technology in American classrooms. This study on videoconferencing in K-12 education has identified practical applications of videoconferencing within the current reform recommendations for constructivist environments. The support strategies that have been identified in this study support the four areas for nonuse of technology in the past. With careful planning, these strategies will offer a framework that could lead to successful "best practices" for this new technology. The cost of equipment and support were not specifically addressed in this study, yet emerged in the support strategies as a critical element to consider.

Including teachers in decision making allows for insight into what teachers will need for successful implementation of videoconferencing in the classroom. The use of technology can only occur when teachers are provided adequate: access, support resources and integrated materials that fit the curriculum that students are learning. "The curricular aspect of the project should also be of the highest priority, or as mentioned elsewhere, it is only being done as an experiment in technology trends" (Delphi participant comment).

References

Brooks, J. G., & Brooks, M. G. (1993). *The case for constructivist classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development.

Cannings, T. R., & Finkel, L. (Eds.). (1993). *The technology age classroom*. Wilsonville, OR: Franklin.

CEO Forum. (1997). *School technology and readiness report: From pillars to progress [on-line document*]. Retrieved November 4, 1997 from the World Wide Web: http://www.ceoforum.org/report97/

Cuban, L. (1986). *Teachers and machines: The classroom use of technology since 1920*. New York: Teachers College.

Dede, C. (1994, October). *The technologies driving the national information infrastructure: Policy implications for distance education* [on-line document]. Retrieved January 11, 1998 from the World Wide Web: http://www.virtual.gmu.edu/index1.htm

Dixon-Krauss, L. (1996). *Vygotsky in the classroom: Mediated literacy instruction and assessment*. White Plains, NY: Longman.

Edelson, D. C., Pea, R. D., & Gomez, L. (1995). Constructivism in the collaboratory. In B. G. Wilson (Ed.), *Constructivist learning environments: Case studies, in instructional design* (pp. 151-164). Englewood Cliffs, NJ: Educational Technology Publications.

Kamii, C. K. (with Joseph, L. L.). (1989). *Young children continue to reinvent arithmetic: Implications of Piaget's theory*. New York: Teachers College.

Means, B., Blando, J., Olson, K., Middleton, T., Morocco. C. C., Remz, A. R., & Zorfass, J. (1993, September). *Using technology to support education reform* (Contract No. RR91172010). Washington DC: U.S. Government Printing Office.

Mehlinger, H. D. (1995). *School reform in the information age*. Bloomington, IN: Center for Excellence in Education.

Office of Technology Assessment [OTA]. (1995). *Teachers and technology: Making the connection*. Washington, DC: Author.

Ravitz, J. (1995). *Building collaborative online communities for K-12*. Published in conference proceedings of the Midcontinent Institute's Fourth Conference.

Sandholtz, J. H., Ringstaff, C. & Dwyer, D. C. (1997). *Teaching with technology: Creating student-centered classrooms*. New York: Teachers College.

Schlechty, P. C. (1997). *Inventing better schools: An action plan for educational reform*. San Francisco: Jossey-Bass

Biographical Sketch

Katherine L. Hayden is an Educational Technology Specialist for Escondido Union School District. She works with teachers at six schools in grades K-8 for planning and implementation of technology in curriculum. She recently completed her doctorate at Pepperdine University. Her dissertation focused on videoconferencing and learning communities.

Address: 13593 Spruce Lane
Poway, CA 92064
E-mail: kahayden@pepperdine.edu
URL: http://hale.pepperdine.edu/~kahayden
Phone: (619) 486-9394
Voice: (760) 432-2302
Fax: (619) 216-4925

Collaboration Tools: A Case Study on Implementation

Denise L. Henderson, Director of Educational Services
Army Management Staff College

Linda B. Ryder, Professor of Sustaining Base Leadership
Army Management Staff College

Introduction

As we move into the 21st century, the number of courses being offered via technology is consistently increasing. At the same time, educational institutions have come to realize education is more than just learning "facts." There has been a recognition that interaction between students is also part of the educational experience. This is particularly true with adult learners who want to build on what is already known and what has already been experienced. Interaction between students and with faculty is necessary for this to happen and a means to accommodate this interaction in the distance education programs must be provided to maximize the learning experience. Computer-mediated conferencing (CMC) is one tool that can be used to supplement televised, video, print, and web-based instruction. CMC includes e-mail, bulletin boards and newsgroups, synchronous chat, conferencing systems, group decision support systems and homepages on the web. This paper will examine how the Army Management Staff College (AMSC) decided to incorporate a variety of CMC tools into its nonresident program.

The AMSC Student and Learning at the College

The Army Management Staff College (AMSC) offers a resident program in leadership and management for civilian employees of the Army. The program is designed to provide civilian leaders the opportunity to develop skills, knowledge and understanding of the "Big Picture" required to make critical decisions in the workplace of today and to prepare them for senior level positions within the Department of the Army or other government agencies. The curriculum is developed using adult educational theory and is learner-centered. Since there are employees who can not attend the 14-week resident program, in 1995 the College began offering a one year nonresident version.

The environment of the student while in the resident program is relatively controlled since students must be in residence for the duration of the course. Students are housed together and provided meals in a common dining facility. In addition, the class is divided into seminars with 15–17 students in each. Each seminar is structured so that the mix of members reflects the diversity of the class as a whole. The seminar is the basis for facilitated discussions that allow students to challenge each other's thinking and learn from each other's experiences. In addition to the seminar discussions, group projects within the seminar are used extensively as a method of promoting collaborative learning. The question of how to replicate this same type and level of interaction in a nonresident program is a greater challenge.

Nonresident Program Design

Initial Design

AMSC has found the interaction between the students to be one of the greatest benefits of the resident program. This is typical of adult education. In order to facilitate this type of learning, the nonresident program was also designed to incorporate the seminar format. There are five seminars with approximately 16 students and one full-time faculty member for each. Seminar members live throughout the United States and Europe, as well as Korea and Japan..

The curriculum is designed with a one-week resident session at the beginning of the year and another one-week resident session at the end. These sessions are considered critical in order to focus the students on the important components of the curriculum. The focus of the initial session is to provide an orientation to the program, conduct teambuilding exercises, and provide content that is learned best face-to-face. The focus of the final session is to complete a capstone exercise in which the group must function as a team using everything learned during the year. This is the student's opportunity to realize the learning that has occurred throughout the year. The remainder of the year long program is completed in nonresident mode and is primarily paper based. The content is divided into four segments, each of which contains at least three graded assignments. There are two video-teleconferences during the year with videotapes provided to those students unable to attend the sessions. In addition, videotapes are issued to augment some paper-based lesson material.

Introduction of Technology

Recognizing the need for student-faculty and student-student interaction, an easy way to submit requirements, and a common platform for student research AMSC decided to establish a "Cyberschoolhouse" by providing students with accounts for America On-Line (AOL). The Cyberschoolhouse is located within the Military City On-Line (MCO) portion of AOL and is restricted to AMSC students, faculty, and relevant staff members. This service provides a bulletin board, library of files available for downloading and e-mail as well as chat room communication capabilities. Nonresident Class 1995 (NR95) was the first to have access to these services, but not until about halfway through the yearlong program. Starting with NR 96, the curriculum was modified to incorporate this technology into the program from day one. Students are introduced to the software and have their accounts set up either before attending or by completion of the first resident session. In addition, faculty developed assignments that require collaborative work. Additional collaborative assignments have been added to each subsequent class.

Assessment of Technology

During 1997-98, some faculty began to feel that the technology in use, both chat and e-mail, did not provide all that was required to support the collaborative tasks that had been added. In particular, the technology did not provide the possibility to build to the higher levels of learning, reflecting analysis and synthesis of materials. In April 1998, at the conclusion of NR97, students were queried about the most effective ways to accomplish these collaborative requirements.

The results confirmed that chat was an excellent method for sustaining the seminar team and coordinating assignments, but was not an effective or efficient way to complete the content pieces of the assignments. Research on distance learning collaboration reveals similar findings from other programs. Chat rooms are a good means of providing the social/coordination aspects of the educational experience and provides some support for the content but does not provide the possibility of discussions that reflect higher levels of learning.

Asynchronous conferencing software appeared to be a better way to help students interact with the content of the course and to support the analysis and synthesis process needed in order to complete collaborative tasks. Faculty used the World Wide Web to search for commercial software that could be used and for information on the experience of other organizations. They found numerous asynchronous conferencing software including some that came bundled as a package with everything needed for a course – syllabus, chat room, e-mail, bulletin board, etc. – while others were packaged separately. Because students in the AMSC program are located all over the world, AOL would continue to be provided as a common platform for all students. Therefore, a stand-alone package for use on the web was determined to be the best option. Some packages allowed single screen display of all responses to a question while others required the reader to open each response separately. Students rarely used the bulletin board in AOL where each message must be opened separately. For this reason, software that displayed all responses at one time was preferred. Not only did this eliminate opening multiple folders, but it also allowed the reader a continuous cognitive flow.

Software Evaluation Process

During the summer of 1998, a sub-group of faculty met to discuss how asynchronous conferencing software could be incorporated in the College. The group determined features that were preferred, how the software could be used to supplement not just the nonresident but the resident program, and actually tested software. Prior to the first group meeting several members has researched the World Wide Web and identified Caucus, WebBoard, AltaVista and Forum as possibly meeting the needs of the college. A preliminary technical review had been conducted by the Information Technology group on these products to eliminate any software that was not compatible with Windows NT, required special hardware, or required a dedicated administrator. The group identified the following characteristics as desirable in conferencing software: easy to use for both students and faculty; clean page design; able to print discussions; reliable; password protection for groups and subgroups; able to attach documents to entries; able to accept graphics; hypertext capability; and video and audio capability. Based on these criteria, the four products were viewed and tested.

The group then narrowed the choice to two, Caucus and WebBoard. The results of the sub-group, including a demo of the two softwares, were presented to the faculty at large. Prior to the presentation many did not understand the difference between the chat room already available and asynchronous conferencing software. The initial perception was both accomplished the same thing. The demonstration provided a visible representation of the differences. It also generated additional ideas on how the software could be used. Faculties from both the resident and nonresident programs were interested in incorporating this type of software into their programs as soon as possible.

Results

After obtaining buy-in from the faculty that conferencing software was needed, the two choices were forwarded to the Information Technology group for in-depth technical evaluation and compatibility review. The final decision to purchase Caucus was based on the page design which was felt to have fewer distractions than WebBoard, and the administrative requirements which allowed faculty to set up their own conferences without having to use the administrator. It was felt that limiting the role of an administrator would encourage faculty to use the software more. Nonresident faculty and clerical support personnel can set up all student and faculty accounts without having to rely on an overburdened IT department.

The next step was more difficult. While the academic part of the organization now understood the benefits of asynchronous conferencing software, the actual purchase had to be authorized by the Directorate of Administration and no one from that organization had attended the presentation. The initial reaction from the administrative personnel was "Isn't this the same as AOL?" "But we can get NetMeeting for free." or "Does this mean we can get rid of AOL?" It was necessary to explain several times what the differences were between a chat room and asynchronous conferencing and the contribution each made to the learning process. It was more difficult to get across to the administrative personnel that one type of technology could not provide everything needed for the nonresident program. Each technology has its benefits and disadvantages and only by providing a full area of technological options could learning in a nonresident environment be maximized. Only by providing potential uses within the existing curricula and providing demonstrations was the difference made clear to faculty.

Conclusions

Involving faculty in the process from the early stages resulted in positive feedback from the faculty. During the brief-back session additional uses that had not been identified by the working group were contributed. However, the lack of understanding by administrative personnel caused some delays in the procurement of the product. In retrospect the process of actually purchasing Caucus would have been easier and quicker if the administrative personnel involved had a better understanding of what the purpose of the software was and how it differed form what was already available.

References

Everhart, R. L. (1999, April). Creating virtual communities. *Syllabus*, *12*, 14-16.

Hitz, R., & Wellman, B. (1997). Asynchronous learning networks as a virtual classroom. *Association for Computing Machinery*. New York: Communications of the ACM.

Walther, J. B., & Burgoon, J. K. (1992). Relational communication in computer-mediated interaction. *Human Communication Research, 19*(1).

Woolley, D. R. (1998, June). *The future of web conferencing* [On-line]. http://thinkofit.com/webconf/wcfuture.htm

Biographical Sketches

Denise L. Henderson is currently the Director of Educational Services at the Army Management Staff College (AMSC). She has 19 years as a training developer at Soldier Support Center, the U.S. Army Engineer School, as well as AMSC. Denise established the Directorate of Evaluation at AMSC and developed the evaluation plan covering all courses conducted by the college.

Address: Army Management Staff College
5500 21st Street, Suite 1206
Fort Belvoir, VA 22060-5934
E-mail: hendersd@amsc.belvoir.army.mil
URL: http://www.amsc.belvoir.army.mil
Phone: (703) 805-4707
Fax: (703) 805-4804

Linda B. Ryder is currently a Professor of Sustaining Base Leadership at the Army Management Staff College (AMSC). She has spent over 30 years as an educator. She has taught at the high school and college levels, been a counselor to adult students, and developed curriculum for adults. She currently teaches and develops curriculum in the distance education program at AMSC where she has incorporated collaborative tools into the curriculum.

Address: Army Management Staff College
5500 21st Street, Suite 1206
Fort Belvoir, VA 22060-5934
E-mail: ryderl@amsc.belvoir.army.mil
URL: http://www.amsc.belvoir.army.mil
Phone: (703) 805-4705
Fax: (703) 805-4804

Strategic Collaborations with Electronic Pedagogies

Karen M. Hicks, Ph.D.
Senior Associate for Academic Programs
Community of Agile Partners in Education

Jack Kayser, Ph.D., P.E.
Instructional Technologist
Lafayette College

Paul Shrivastava, Ph.D.
President
eSocrates

CAPE: A Community of Agile Partners in Education

CAPE was formed as a not-for-profit membership consortium to help educational institutions meet the challenge of remaining competitive in an era of rapid and unpredictable change. Its purpose is to serve its members:

- by facilitating productive educational change
- through the use of instructional technologies
- in collaborative, resource-sharing partnerships

Sixteen small-to-medium-size independent and community colleges created CAPE in 1993-1994. The following year, membership grew to 24 members. By 1996 there were 42 members, including the 14 Pennsylvania State System of Higher Education (SSHE) institutions, as well as museums and cultural
organizations. As of June 1999, there are more than 100 members. CAPE members include the following types of institutions:

- Colleges, Community Colleges and Universities
- School Districts and Intermediate Units
- Cultural, Scientific and Community Organizations

CAPE assumes that the present educational environment is one of rapid change in the delivery of education. Education is being forever altered by new and creative educational relationships made possible by highly interactive media. In such an environment, institutions are thriving by forging new partnerships and alliances beyond their institutional walls.

CAPE encourages these strategic alliances and cooperative activities between and among its members. Indeed, CAPE provides a package of services intended to help its members develop the ability to choose cooperation with other institutions as a first-choice strategy in meeting their learners' needs and in providing customized learning experiences.

CAPE facilitates resource-sharing partnerships, not just distance learning. The strategic sharing of resources using a range of technologies eliminates geographic constraints. CAPE enables its members to partner with each other, and to link them to high-quality programs and institutions throughout the world, just as businesses, governments, and other public and private agencies are interacting on a global basis.

The hallmark of CAPE's approach is the use of a combination of technologies to enable its members to achieve their strategic and pedagogic goals. Determining what these goals are is the prerogative of each CAPE member institution. Each will have different goals, and that is as it should be. CAPE encourages its members to adopt the paradigm of "Organizational Agility" as a transformative strategy for sharing resources in order to strengthen institutional quality.

The CAPE vision is

- to create new relationships among its members
- to eliminate geographical and institutional boundaries, and
- to help members design customized educational programs to meet students' needs

Two of our strategic member partners this year that worked on Web-based course solutions for faculty are Jack Kayser from Lafayette College and Paul Shrivastava from eSocrates and Bucknell University. Dr. Kayser conducted Web training for CAPE member faculty via videoconferencing. Dr. Shrivastava offers a Web software program at a deeply discounted price to CAPE member institutions. Each will explain their contributions below.

Video Conference Workshops

Jack Kayser, Ph.D., P.E., Lafayette College

A series of videoconference workshops was organized, planned and conducted by Dr. Jack Kayser during the 1998-99 academic year on the topic of faculty use of the World Wide Web. The workshops were intended to establish a common base of knowledge, so that a compatible technical proficiency could be assumed among CAPE partner institutions. The main participants in these workshops were faculty interested in creating web pages, and staff and administrators involved in supporting web development.

Twelve workshops took place, involving a total of twenty 20 CAPE institutions. The topic of these workshops ranged from a basic introduction to using the web to specific instructions on how to use FrontPage 98. A web site was built to provide reference materials associated with various web-authoring topics. The workshops originated from the CAPE office in Bethlehem, PA. Various support materials, such as handouts and outlines, were delivered via email attachments and through the website.

Scheduling of these workshops was accomplished by posting notices to the CAPE listserv. Multipoint participation in a videoconference was accomplished by using the CAPE bridge, which is managed by VSPAN Corporation. The typical workshop involved two or three institutions, however this number reached as high as five during certain sessions.

On several occasions, CAPE members asked for and received customized workshops. These customizations not only included the content and focus, but also time and date. As it turned out, the level of experience and knowledge in the use of the Web varied significantly across the CAPE membership. Some institutions were just beginning to install networks and establish servers, while others already had ongoing web-based courses.

The opportunity to discuss academic web usage in a conference with several institutions present was valuable. On several occasions, deans, provosts, and even presidents were there to observe and ask questions. The most important information shared was the general understanding of how Internet related technology can be used to facilitate learning, in addition to a clarification of what kinds of resources (support staff, equipment, budget, faculty time, and student/faculty expertise) are needed to use the Internet effectively in teaching.

The technical forum that was established during the course of these workshops has proven to be an effective means of sharing expertise among the CAPE membership. As needs evolve, so will the topic of these workshops. As members become proficient in handling the basic tools and skills associated with the Web, new workshops will be developed to focus on more complex issues, such as streaming video or server management. The objective will always be to share critical technical knowledge of the day.

Successful Collaboration for eLearning

Dr. Paul Shrivastava, eSocrates and Bucknell University

eSocrates is an online learning systems company that partners with universities and colleges to develop value added Web-based educational systems. It offers an easy-to-use technology with which instructors can create their own Web courses in a few hours. It supports instructors with training on how to become good online teachers/facilitators. It provides Web-centric content in the form of over 400 instructor supported online courses and self-paced online tutorials. Once instructors are teaching on the Web, eSocrates supports them with ongoing instructional services that allow sharing of Web learning resources, and bringing interactivity to their classes through Web-casted events.

As an example of this partnership approach, eSocrates is providing CAPE members organizations a set of services aimed at getting a large number of faculty online with their courses and building an online learning community. Each participating member gets a course site that they can customize with their own syllabus, projects, assignments, links, etc. These sites have pre-embedded in them all the online teaching tools including chatrooms, bulletin board, quizzer with auto grading, class email, grade tracking, registration, etc. Instructors also go through an online course on "Internet Based Teaching." Here they learn to use online teaching tools, creating and maintaining their sites, and personal experiential appreciation of online learning.

Partnering with colleges, companies, training groups, consortia and professional organizations offers a different model of business than the conventional supplier-buyer model. It is more consistent with the network nature of Web education, and the need and benefits of sharing resources in a networked environment. It also requires patience and careful development of partnering relationships. Another factor for success is using a framework and language that is meaningful both for academic and private parties involved in the partnership. Collaborative projects should be deliberately paced and allowed to naturally evolve in phases. Our relationship with CAPE is new but maturing, and we are looking at several new projects in the near future. Collaborative partnering can be especially effective for establishing online learning programs at smaller colleges and universities. The limitations of financial resources, lack of economies of scale, and lack of access to technologies can be overcome by partnering and collaboration between academic institutions and private companies that can collectively gain scale economies and mutually reinforce each other's efforts. CAPE serves as a vehicle for such collaboration and private companies such as eSocrates and VTEL bring technological resources to all members. We invite members of the audience to consider joining our efforts or creating one of their own, to make Web-based education and training a mainstream phenomenon.

Biographical Sketches

Karen M. Hicks, Ph.D., is a senior associate at the Community of Agile Partners in Education (CAPE). Her responsibilities include initiating and coordinating academic programs and projects for the consortium of over 100 members.

Address: CAPE
119 W. Greenwich St.
Bethlehem, PA 18015
E-mail: hicksk@acape.org
URL: www.acape.org
Phone: (610) 882-5275 ext. 4359

Jack Kayser, Ph.D., P.E., is an instructional technologist at Lafayette College. He has also been an educational technology consultant at CAPE for 1998-1999. He is responsible for the design, implementation and maintenance of electronic classrooms, as well as faculty support and training in the area of computer use and distance learning.

Address: Lafayette College
Skillman Library
Easton, PA 18042
E-mail: kayserj@lafayette.edu
URL: www.lafayette.edu
Phone: (610) 330-5609

Paul Shrivastava, Ph.D., holds the Howard I Scott Chair and is Professor of Management at Bucknell University. He is also the designer of the eSOCRATES Web learning environment and President of Environmental Intelligence, Inc. He has published 13 books and written over 150 articles in management education and professional journals. Shrivastava serves on the editorial boards of leading management journals, including *Academy of Management Review, Strategic Management Journal, Organizations, and Organization and Environment.* He has taught online courses in a variety of modes, including a course on "Internet Based Teaching." Complete resume can be seen at: http://www.facstaff.bucknell.edu/shrivast/boss.html

Address: Environmental Intelligence, Inc.
425 Pheasant Ridge Rd.
Lewisburg, PA 17837
E-mail: socrates@esocrates.com
URL: www.esocrates.com
Phone: (570) 523-0030

Strategies for Addressing "Cut-and-Paste" Plagiarism in Networked Environments

Lisa Janicke Hinchliffe, Library Instruction Coordinator
Milner Library
Illinois State University

Introduction

The easy availability of full-text research databases, web documents, and online term paper mills has raised concerns and fears about plagiarism and related integrity in information use issues, particularly in high school and college settings. For the same reasons that plagiarism may be more attractive to students, however, original source texts are also easier for faculty and librarians to track. The strategies presented here for preventing and detecting plagiarism and, when necessary, identifying original source texts provide guidance for instructors who are addressing the problem of plagiarism in their classes.

Plagiarism Defined

Plagiarism is a problematic concept to define. In his essay "Helping Students Avoid Plagiarism," Stephen Wilhoit identifies the following acts of plagiarism:

- Buying a paper from a research service or term paper mill.
- Turning in another student's work without that student's knowledge.
- Turning in a paper a peer has written for the student.
- Copying a paper from a source text without proper acknowledgment.
- Copying materials from a source text, supplying proper documentation, but leaving out quotation marks.
- Paraphrasing materials from a source text without appropriate documentation.

This listing illuminates the primary problem with the term "plagiarism": it is used to describe (at least) two fundamentally different types of behavior. The first three acts of plagiarism identified by Wilhoit are acts of cheating – misrepresentations of authorship. The last two acts of plagiarism identified by Wilhoit are acts of error – mistakes in research writing and citation. Depending on the intention and understanding of the student and the extent of the text copied, Wilhoit's fourth example may be misrepresentation of authorship or an error in writing and citation.

Though mistakes in writing and citation are indeed important for instructors to address, this paper will primarily engage issues directly related to misrepresentation and particularly those related to Wilhoit's first and fourth examples.

Plagiarism in a Networked Environment

Misrepresentation of authorship, though perhaps more prevalent in networked information environments, is not a new phenomenon. Students have long copied encyclopedia articles for their topical reports, and the lore of fraternity term paper files is well known on university campuses. What has changed in the networked environment is the ease by which information can be transferred from an original source document—just "cut-and-paste"!

Full-text electronic resources are abundant. Students can easily copy text from websites written by individuals and organizations. Library databases increasingly include full-text articles that a user can download or send to an electronic mail account. Additionally, online term paper mills offer free and ready-to-order texts on many topics.

Fortunately, though plagiarism may be made easier and simpler by networked technologies, and therefore more attractive to students, locating original source texts and employing strategies of prevention and detection are also easier for instructors and librarians.

Strategies

Strategies for Prevention

The best way to deal with plagiarism is to work actively to prevent it. Though this may seem time-consuming, it is far less difficult and uncomfortable than tracking down original texts and confronting students.

Discussion. Prior academic experiences may have encouraged students to develop habits which make plagiarism likely, e.g., writing assignments which required only reporting facts from an encyclopedia, or scavenger hunts which only gave points for correct answers and did not require source documentation. In order to help students understand the importance of documenting intellectual debt and the seriousness of plagiarism, instructors should discuss plagiarism with students, both what it is as well as instructor and institutional policies about it.

Process. Assignments that emphasize the processes involved in doing research and writing make plagiarism unattractive. With such an approach, a student who wants to plagiarize the end product will have to attempt to fabricate a process that would lead to the product. In all likelihood this will be a great deal of work for the student, probably more than if the student did not plagiarize, and obvious to the instructor. Ways to emphasize process include requiring topic proposals, idea outlines, multiple drafts, interim working bibliographies, and photocopies of sources. If possible, instructors should grade the process as well as the finished product.

Analysis. By requiring that students to engage and apply ideas, not just describe them, instructors can make it more difficult for students to find files at online term paper sites that reflect the parameters of the assignment, and also discourage copying from sources like the encyclopedia. Alternatively, instructors can require students to reflect personally on the topic and/or the processes of research and writing. The reflection can be assigned either as part of the paper itself or as an additional writing assignment. Analysis will also increase student understanding of the topic at hand by activating higher order thinking skills.

Citation Guidelines. When only portions of a writing assignment are plagiarized and when the original texts are websites and/or full-text articles from library databases, misrepresentation may be the result of confusion about how to cite electronic sources. Instructors should provide students with direction in this matter. Official guidelines for citing electronic sources are available online for both MLA Style (http://www.mla.org/mail_st1.htm) and APA Style (http://www.apa.org/journals/webref.html).

Strategies for Detection

Unfortunately, even with well-developed assignments and classroom discussion about the seriousness of plagiarism, plagiarism may still occur. Many instructors do develop a sense of "I know it when I see it" through experience and reflection; however, the following guidelines will be useful to any instructor in detecting instances of plagiarism.

Formatting. Unusual formatting or formatting that does not match what is required may indicate that "cut-and-paste" procedures were used in compiling the paper. In particular, instructors should check for website printout page numbers or dates, grayed out letters, varying margins, and unusual capitalization.

Vocabulary and Syntax. Jargon or advanced vocabulary and sentence structure beyond the skill level of the student may also indicate that the text was not written by the student. Instructors should also attend to non-standard spellings or uncommon phrases and slang.

Bibliography. The bibliography can be a particularly revealing component of a paper because students who are "saving time" through plagiarism are unlikely to attend carefully to the details of the bibliography. Instructors should check that the correct citation style is used and used consistently, as well as confirming that the entries in the bibliography are the sources referenced in the paper. Some instructors require that students submit copies of their sources with their papers. Suspicious instructors should also note any unusual or surprising bibliographical entries.

Quotations. Quotations can also be very revealing. Instructors should read quotations carefully and note if they sound like quotes from a personal interview with a corporate official or someone equally inaccessible to a student researcher, or if there are quotes without bibliographic citations.

The Assignment Itself. Instructors should also reference the original assignment and its requirements for analysis, personal reflection, voice (first or third person), and number and type of citations, and then note whether the requirements of the assignment have been met. It is unlikely that a text from a term paper mill, website, or full-text article will meet all of the parameters of a particular assignment. In many cases, a student who realizes the inadequacy of the original text will try to "add on" the missing elements – these additions are often quite obvious.

Detection Software. A number of software creators are capitalizing on the fears and concerns of instructors and academic administrators and are offering software to detect plagiarism. EVE: The Essay Verification Engine (http://www.canexus.com/eve/index2.html), IntegriGuard (http://www.integriguard.com), and Plagiarism.org (http://plagiarism.org) are three such programs. Each program uses a detection algorithm to compare student writings to potential original source texts (different programs use different collections of comparison texts). In deciding whether to purchase such programs, instructors should consider both whether they wish to introduce a technological arbitrator for detecting academic dishonesty into the teacher-learner relationship, and whether the comparison texts are appropriate for detecting the plagiarism that they suspect.

Strategies for Locating Original Texts

If an instructor suspects plagiarism, the following strategies will be useful in tracking down the original source text(s).

The Text. Instructors should start by checking the student's text for original source identification clues including unusual keywords or phrases, non-standard spellings, slang, jargon, suspect quotations, and any original author references. These clues can be used in forming search statements for web search engines or library databases. If a keyword is especially unusual, a meta-search engine for websites is a powerful tool.

The Bibliography. On occasion, a student will have added the original source to the bibliography. Instructors should examine the sources listed in the bibliography, particularly entries that postdate almost all other citations. If the student's topic is particularly narrow or scholarly, a review of sources in the institution's library may be useful.

Term Paper Websites. Many of the online term paper websites provide papers without charge or, if they charge for downloading a paper, searching and summaries are free. Yahoo! - Business and Economy: Companies: Communications and Media Services: Writing and Editing: Research and Term Papers (http://www.yahoo.com/) and The Instructor's Guide to Internet Plagiarism (http://www.carleton.ca/~gsenecha/guide/) both provide extensive listings of term paper websites. In addition to potentially finding the original text source of a particular paper, instructors will find familiarity with the sites and the quality of papers that are available useful when discussing plagiarism with their students.

Assistance. Librarians have professional expertise in electronic information retrieval, database searching, and the organization of information, as well as networks with other librarians who can assist with particularly challenging searches. Instructors should ask their librarians for assistance with searching for original texts. At some institutions, librarians may be willing to do the searching for the instructors.

Conclusion

Though not a new problem, the easy availability of full-text research databases, web documents, and online term paper mills has justifiably raised new concerns about plagiarism. By following the strategies outlined above for preventing, detecting, and tracking plagiarism in today's networked environments, instructors should be able to continue to benefit from the advantages of networked information while limiting the problem of plagiarism.

Reference

Wilhoit, S. (1994). Helping students avoid plagiarism. *College Teaching, 42*(4), 161-164.

Biographical Sketch

Lisa Janicke Hinchliffe is the Library Instruction Coordinator and an Assistant Professor at Milner Library, Illinois State University, and has master's degrees in library science and educational psychology from the University of Illinois at Urbana-Champaign. She is interested in how people use, learn to use, and misuse information in networked environments.

Address: Milner Library, Illinois State University
Campus Box 8900, Normal, Illinois 61790-8900
E-mail: Lwhinch@ilstu.edu
URL: http://alexia.lis.uiuc.edu/~janicke/lisa.htm
Phone: (309) 438-7045
Fax: (309) 438-3676

Implementing the Florida Virtual Campus

Fred Hurst, Executive Director
Florida Virtual Campus

Florida's thirty-eight public institutions have been aggressive in responding to student and policy maker demands for expanded distance learning opportunities. Last year, there were an estimated 60,000 students taking distance learning offerings and fall 1998 saw an increase in courses offered from 1,500 to over 1,900. Until now there has been no unified strategy to market and promote distance learning efforts.

Florida has taken a leadership role in the nation by creating a new model for distance learning called the Florida Virtual Campus (FVC). This action will produce a seamless postsecondary distance learning system for Florida, and avoid duplication by building on the many existing investments in progressive comprehensive projects such as:

- Community College Distance Learning Consortium (CCDLC)
- Florida Public Postsecondary Distance Learning Institute (FPPDLI)
- Florida Distance Learning Network (FDLN)
- Distance Learning Library Initiative (DLLI)
- College Center for Library Automation (CCLA)
- Florida Center for Library Automation (FCLA)
- Florida Academic Counseling and Tracking for Students (FACTS) statewide student advising system
- common course numbering system
- articulation agreements among the public institutions and with other private colleges and universities, including the Independent Colleges and Universities of Florida (ICUF)

FVC will facilitate distance learning opportunities to help provide affordable access to the 200,000 additional students expected by 2010; to increase the number of degrees held by Floridians; to create cooperative relationships among our community colleges and universities; and, to allow students to complete substantial portions of their degree programs at a distance.

The Florida Virtual Campus maintains the autonomy of the Florida public community colleges and universities that will provide the courses and award the degrees. Each student will have a home campus for advising and degree audit purposes. Students may take a variety of courses from different CCS and SUS institutions consistent with the program format of the home institution and relevant institution policies. Comprehensive academic and student services will be provided through a mix of existing projects such as the FACTS statewide student advising system and new projects coordinated with existing initiatives to ensure one-stop shopping for distance learning students.

The Florida Virtual Campus will serve as a distance learning information collection, maintenance and dissemination center for a wide variety of institutional, faculty and staff issues and interests. For example, FVC will facilitate sharing courses among institutions, hold regular statewide meetings to facilitate communication among the community colleges and universities, and be an advocate for distance learning students.

The Florida Virtual Campus will develop a Web catalog that will list the full range of postsecondary distance learning offerings. This will enable students to shop for courses at all 38 public institutions. The FVC will develop an awareness campaign and will pursue publicity through editorial boards, PSAs, press releases and related activities.

The Florida Virtual Campus is a State University System/State Board of Community Colleges center with an advisory board consisting of members from each system. There will be no cost to Florida public institutions to join the FVC. The State University System Board of Regents and the State Board of Community Colleges unanimously endorsed the Florida Virtual Campus. The Legislature funded the FVC.

The mission of Florida Virtual Campus is to assist Florida postsecondary institutions in providing affordable access to quality learning opportunities and services by creating a cooperative atmosphere that will lead to a seamless distance learning experience for students.

The FVC will facilitate comprehensive information resources to expand availability and access to postsecondary educational distance learning resources. This will be a dynamic, evolving organization that will be responsive to needs of the higher education institutions in fulfilling their missions to meet student and employer demands.

URLs for Selected Florida Sites

Virtual Institution Design Team Report:
http://sun6.dms.state.fl.us/institute/vdtreport.html

Community College Distance Learning Consortium:
http://www.distancelearn.org

Florida Public Postsecondary Distance Learning Institute:
http://www.state.fl.us/institute

Florida's Campus:
http://www.flcampus.org

Florida Distance Learning Network:
http://www.firn.edu/fdln/

Distance Learning Library Initiative:
http://dlis.dos.state.fl.us/dlli/

Florida Academic Counseling and Tracking for Students (FACTS) statewide student advising system:
http://www.facts.org/

Biographical Sketch

Fred Hurst is the founding executive director of the Florida Virtual Campus (FVC). To be inaugurated in spring 2000, the FVC will assist Florida postsecondary institutions in providing affordable access to quality learning opportunities and services by creating a cooperative atmosphere that will lead to a seamless distance learning experience for students. From 1997-1999, Fred was executive director of the Florida Public Postsecondary Distance Learning Institute. Prior to moving to Florida in January of 1997, Fred was with University of Maine System for eight years where he was dean of Information Technologies and Telecommunications for the Education Network of Maine.

Address: Florida Virtual Campus
10501 FGCU Boulevard South
Fort Myers, FL 33965-6565
E-mail: FHurst@fgcu.edu
URLs: http://www.flcampus.org
http://www.state.fl.us/institute
Phone: (941) 590-1015
Fax: (941) 590-1014

Asynchronous Course Development: The Secrets of Our Success

Debbie Inselman, Distributed Learning Instructor
Department of Defense Educational Activity

Donna Collis, Lotus Notes Application Developer
Vector Research, Inc.

Challenges

The Department of Defense Educational Activity (DoDEA) forms a worldwide network of educational institutions with the mission of serving the children of military personnel and civilian support staff located at army posts, naval stations and air bases overseas. These 170 schools are dispersed all over the world, with schools located in Germany, the United Kingdom, Iceland, the Netherlands, Belgium, Italy, Turkey, Spain, Bahrain, Korea, and Japan. Significant challenges are posed by geographical distances and time differences when attempting to link schools or foster teamwork among DoDEA students.

As the US military began to reduce its military presence around the world administrators faced another challenge – how to provide a full curriculum of courses to a smaller group of students with a smaller staff of DoDEA instructors. For example, how do administrators in a remote location accommodate the one student who is interested in taking advanced placement physics? What is the most cost effective method for this student to take this course? Would traditional distance learning provide the interaction and teamwork that makes learning effective for students of this age?

Communications technology such as the Internet provides a solution to overcoming the geographic and time boundaries. However, any technology adopted by the schools must be extremely intuitive and easy to use to ensure acceptance by faculty and students. It must also do more than simply serve as an electronic version of a correspondence course. Added to this, administrators of the distributed learning program must resolve the challenges of linking countries that use incompatible technology, such as different phone systems.

Solutions

The DoDEA Distributed Learning School was originally established to offer educational opportunities to students within schools too small to support a wide range of advanced courses. Beginning in the spring semester of school year 1995 DoDEA began offering distributed learning courses utilizing the Lotus Notes teleconferencing platform as its main course delivery method. Notes also supplements traditional classroom instruction for other classes allowing students around the world to learn together.

DoDEA DL began utilizing Lotus Domino to allow courses to be accessed via the Web. Domino is a Web server from Lotus Development Corporation that runs on a wide variety of computer hardware and operating systems. Domino uses a collection of Lotus Notes databases to create a dynamic, interactive web site with security. (Oliver, 1998) Domino provides a powerful, yet easy-to-use electronic mail system, numerous features for sharing files and data with co-workers, methods for working remotely, and many other features that enable tasks to be performed over a network. Domino provides accessibility and flexibility and is appropriate for large and small organizations (Plumley, 1997).

The Ability to Offer a Full Curriculum to Every Student

The DoDEA distributed learning program gives students in smaller schools access to courses that their schools would otherwise not support. In general, these tend to be specialized courses, such as advanced placement offerings in computer science, physics and calculus. Distributed learning teachers use Notes to develop a classroom atmosphere while teaching students throughout the world. A high degree of teacher contact and collaboration with classmates are integral elements of all DoDEA distributed learning courses.

Every Notes application uses a database. In the DoDEA environment multiple databases are utilized to achieve the level of instruction and student collaboration that is necessary for success. Some of the databases that are common to all courses are:

- The course database has been developed to store lesson information, a course syllabus, weekly calendar, grades and instructions to students regarding assignments. Generally this is a read-only database for students. Each instructor creates new documents to be stored in this database for instruction purposes. It is possible for students to print the database contents for use as a reference.
- The library database is where the instructor stores tips for success on individual lessons, self-check answers, useful internet sites, extra credit assignments and other reference documents.
- The assignment database is where students upload their completed assignments. They utilize a form for each assignment that is developed by the teacher of the course. Students can also utilize this database to ask questions concerning material they do not understand.
- The test database is where various test documents are stored. Students are given access to this database on the day of the test. This security allows us to maintain the integrity of the exams. After the students have taken the test, their access to this database is removed.
- The discussion database is used to incorporate cooperative learning techniques into our curriculum areas. By discussing various problems or scenarios developed by the instructor of the course, we are able to establish a "real classroom spirit" in the virtual classroom.
- The facilitator database has been developed for information exchange between the distributed learning instructor and the local facilitator. The local facilitator is an instructor at the school where a student is enrolled who acts as a mentor for that particular student.

To be effective any solution for communication and collaboration must be easy to use. DoDEA has found that Notes excels on this front with its intuitive interface and other features that make it easy to learn and use. Students are able to get started in the courses with a minimum amount of training and practice. Faculty members can utilize the communication capabilities to tap the expertise of their peers, share information and compile databases of information relevant to their teaching. The distributed learning environment allows faculty to explore new ways of teaching that draw on the collaborative strengths of the program.

Enriching Courses with Collaboration, Group Learning and Special Projects

Our distributed learning courses go beyond serving as electronic versions of correspondence courses. Students enjoy working together, and group learning creates a high level of interaction that enhances learning. Through the use of Notes students are able to communicate with their peers to produce the DoDEA *Daily Planet* in Journalism class or study Hamlet together in AP English. The *Daily Planet* is composed of articles written by students who are enrolled in a journalism course in participating schools. A student might choose to start a topic for collaboration and other students join the group and work on the article, contributing research, interviews and insights. When all the information has been collected, the original student writes the article with assistance from the group. Once articles have been submitted, edited and approved, the coordinator assembles the newspaper and designs a "Web edition" which eliminates the authors' last names and schools. A key element in any distributed learning course is that students can interact at their convenience. Through the development of our courses using Lotus Notes it is easy for the students to get together on-line when it is practical. The projects bring our students closer together and allow them to gain new insights. Although most of our DoDEA students are Americans living abroad, this worldwide student body is extremely diverse. They bring an international perspective and multicultural background to projects that allow students to benefit from different perspectives and receive a wider view of the world.

Another successful aspect of the program is the ability to accommodate special activities such as "The Writing Project" designed to supplement the English/language arts curriculum. Participants are enrolled in English courses at their own schools, but they interact with students around the world. A student in Korea might peer edit the work of a student in Germany or a student in Italy might comment on a poem written by a student in Turkey. "The Writing Project" is divided into grade levels: 7th and 8th, 9th and 10th, 11th and 12th and AP. Each level has the same structure: introductory activities, peer editing, creative writing and a literary forum. During the course of the year, the best student work is selected by the project's coordinator and published on the Web to showcase the talents of DoDEA students. Another special project is known as "Celebrations!" This project was developed by an elementary school educator and is centered around American and host nation holidays. After a get-acquainted activity students explore the ways in which people observe these special days, focusing on everything from the origins of the holiday to the art and music associated with it. A writing activity, "Holiday Meaning," allows each student to share the significance of a particular holiday in his/her own family.

Not only do students benefit from collaboration or group learning our instructors may also utilize the databases to share ideas and draw upon each other's expertise. Teachers can share ideas for lessons and comment on other projects. In the facilitator's database discussions can evolve around technical problems and explore new ways of teaching that can draw on the collaborative strengths of the diverse teaching faculty.

When our students are enrolled in these courses they are using the same technology they will find at leading colleges and corporations. Though they may be in isolated locations, distributed learning brings them advanced technology and capabilities that enhance their learning experience now and prepare them for the future. One of our goals is to provide a tool that allows for the sharing of information and the preparation of students to be lifelong learners in a global environment.

Lessons Learned

To be successful this type of learning environment must continually change. Many of the projects we started with in 1995 have been eliminated because they did not work well or were simply outdated. Yearly review and revision of courses is a must for a successful program. The following advice is offered to others exploring the possibility of adding distributed learning to their programs (Lotus, 1996):

- Use the transition to distributed learning as a chance to reconsider the role of the traditional classroom not as a chance to imitate it.
- Approach distributed learning as a team effort that brings together faculty, administrators and technical support. Work together to develop a realistic timeline and give key players time to plan.
- Expect to invest in equipment, personnel and training. Teacher training is more critical than student training since they must be confident in their abilities to use the technology.
- Use the Internet as a method to link countries with unreliable phone systems.
- Be sure that instructors are involved in the decision to move to distributed learning. Teachers must buy into the project and must be enthusiastic about the potential.
- Start with one or two manageable projects. It is better to have a few viable courses than multiple unreliable ones.
- Be sure to build in support for key faculty and administrative functions such as teacher forums and curriculum planning.
- Involve technical support people. They are important to the success of a project.
- Have fun! Whole ranges of possibilities are available for teaching in this environment and implementing the program can be very exciting for everyone involved.

References

Lotus. (1996). *Take notes! Lotus Notes on campus and around the world.*

Oliver, S., & Wood, P. (1998). *Lotus Domino Web site development.* New York: McGraw-Hill.

Plumley, S. (1997). *10 minute guide to Lotus Notes 4.5.* Que (A Division of Macmillan Computer Publishing).

Biographical Sketches

Debbie Inselman has taught AP Computer Science via Telecommunications for seven years. She is actively involved in designing distributed learning curriculum for instruction in AP C++. She also has been the principle developer for the DoDEA website.

Address: CMR 443 Box 756
APO AE 09096
E-mail: debbie_inselman@odedodea.educ
Phone: (49) 6134-604679
Fax: (49) 6134-604337

Donna Collis is a Certified Lotus Professional involved in application development work for Vector Research, Inc. She is a former DoDEA instructor involved in designing courses using Lotus Notes as the telecommunications platform.

Address: 3737 Broadway Suite 205
San Antonio, Texas 78209
E-mail: collisd@vrinet.com
Phone: (210) 832-3000
Fax: (210) 832-3099

How to Implement and Manage an Award-Winning Videoconference Distance Learning Network

Jeanne Joslin, Director of Distance Learning
KPMG

Jacqueline P. Leonard, Distance Learning Events Producer
KPMG

Introduction

In today's competitive business environment, organizations are constantly challenged to make better and more effective use of available resources. At KPMG, a premier professional services firm whose "product" is intellectual capital, the training organization's mission is to provide strategic, focused, and on-going learning interventions to its professional staff. With the inception of the KPMG Knowledge Channel, at present a 42-site videoconference distance learning network, the firm took a giant step toward making learning and training more accessible, convenient, and cost-effective The story of the Knowledge Channel—from earliest concept to full-blown implementation, operation, and expansion—is the subject of this presentation.

The Technology

Videoconference distance learning employs technology that many organizations have previously used for business meetings and videoconferences. An organization's familiarity with this medium can make for a relatively smooth transition from conventional usage to training and education applications. At its inception in June 1997, the Knowledge Channel included 25 sites located throughout the United States. We recently completed a network expansion to 42 sites.

At KPMG, participants attend classes at their office location with 15 to 30 colleagues. Locations are linked electronically for a specific learning event. Presenters and instructors are located in one or more of the half dozen broadcast rooms, and can even give shorter presentations from receive rooms. All rooms have two large TV monitors and cameras. Slides, videotapes and overheads are broadcast to all rooms. The KPMG Knowledge Channel is two-way video and audio so all presenters and participants can be seen and heard. An interactive keypad system allows for questions, responses and discussions. Participant responses are instantly tabulated and displayed.

Can Videoconference Distance Learning Meet Your Organization's Needs?

Organizations have certain training goals, methodologies, and characteristics that will determine if videoconference distance learning will be effective.

Candidates for videoconference learning are organizations in competitive business environments which demand employees have the sharpest skills and the most up-to-date information. Their employees need on-going training in areas such as industry trends, standard methodologies, technical updates, firmwide initiatives, leadership skills, etc.

Important organizational goals include minimizing time away from the job and the best use of training dollars. Large organizations with thousands of employees who work in dozens or even hundreds of locations may find sending employees to a central location impractical, time-consuming, and costly. Further, sought-after thought leaders have limited availability and cannot go from location to location, nor teach classes over and over.

Implementing a Videoconference Distance Learning Network

Implementation of a distance learning initiative starts with an analysis of an organization's strategic needs. Where are we going? How can we best get there? What are the relevant cultural factors? What is the technology readiness? How are people being trained currently? How effective is this training and what does it cost? Where are the participants located? Who and where are the presenters/instructors? How can the knowledge and expertise of the firm's "thought leaders" be communicated more widely and effectively?

If the answers to these questions suggest that a distance learning network would be a valuable and cost-effective initiative for your organization, the next step involves developing a strategic implementation plan. Finding champions, especially senior leaders, is vital to selling your idea to management and securing the necessary funds. Consider a limited pilot or proof-of-concept. Leasing equipment rather than purchasing may be wise initially. Select vendors with whom you feel you can have a productive and mutually beneficial ongoing relationship. Ensure technology readiness and reliability, which may require a close collaboration with the Information Technology department. Staff the initiative properly. Then—market, market, and market so you convince course sponsors and participants to try it. Conduct on-going evaluation efforts to measure learning results.

Critical Success Factors

There are a number of critical factors which are associated with a successful distance learning initiative. Appropriate staffing and securing the right mix of technical support staff is the key to accomplishing everything else. Selecting topics and initiatives that are highly strategic for the organization means that your network will make a real business difference and be viewed as "need to have" rather than "nice to have." Excellent customer service to all constituencies, including course sponsors, presenters, and participants, is essential also. Working with course sponsors and staff on instructional design, and rehearsing presenters ensures good programming. Technology trouble-shooting and reliability-testing are essential for this delivery method to be accepted. Developing sensible polices and procedures helps you manage requests, mediate conflicts and keep things running smoothly.

Measurement

How do you know you're successful? Go back to the business need. Are you meeting it? We monitor a number of important variables on an on-going basis. We track costs for equipment and maintenance contracts, as well as telecommunications costs (ours is an ISDN terrestrial network). We record the number and duration of classes, how many sites were in the call, the number of participants in attendance, and continuing professional education (CPE) credits which are state mandated for most of our employees. We compute the cost per CPE credit and compare this figure to the cost of credits obtained via traditional instructor-led courses. Distance learning CPEs cost the firm 50% less than those obtained in traditional classroom settings. Participation in some classes runs to 500 and more; we compare this magnitude of access to the thought leaders presenting the program with the former model of only a few dozen people flying to a central location. Course sponsors monitor participants' satisfaction levels, which compare favorably with traditional classroom delivery methods.

In its first year of operation, the Knowledge Channel included 25 sites, presented 103 programs, and provided training to 9,550 participants. In its second year, site locations were expanded to 42, 150 programs were presented, and over 17,000 participants attended Knowledge Channel classes. Clearly, the Knowledge Channel is an idea whose time has come, and it's making a real difference in the training and educational opportunities available at KPMG.

For KPMG, winning Telecon's 1997 Honorable Mention for "Best Distance Learning Program – Corporate Training" and the 1998 Second Prize award for "Most Outstanding Distance Education Network" were very exciting, and without precedent for such a "young" network. On the home front, we receive consistently high praise from the many firm leaders who have conducted programs on the Knowledge Channel. Our participants marvel at the convenience of attending Knowledge Channel events, and appreciate the many interesting and varied topics, which are available. At the most basic level—supply and demand—we have too many requests to fit into the calendar.

Note: KPMG is one of the oldest and largest firms providing professional services in consulting, tax and assurance. Extensive employee training is conducted by the Center for Leadership Development (CLD). The Knowledge Channel is but one of the CLD's training and learning initiatives.

Biographical Sketches

Jeanne Joslin, Director of Distance Learning at KPMG, has been working in the field of instructional technology for 13 years. She worked as a private consultant and for American Express before assuming her current position, which she considers the high point of her career. Jeanne holds a master's degree in Educational Technology.

Address: 3 Chestnut Ridge Road
Montvale, NJ 07645
E-mail: ajjoslin@kpmg.com
Phone: (201) 307-8381
Fax: (201) 505-6345

Jacquie Leonard, Distance Learning Events Producer, works with KPMG's instructional designers and presenters to package Knowledge Channel sessions. Jacquie joined the firm in January of 1998 after spending 18 years at New Jersey's Union County College, where she managed the start-up distance learning and ITV offerings and related faculty development. She is currently pursuing an M.A. in Communications at Monmouth University.

Address: 3 Chestnut Ridge Road Montvale, NJ 07645
E-mail: jpleonard@kpmg.com
Phone: (201) 307-7441
Fax: (201) 505-6345

Designing WebLearning That Transforms Enterprise Development: The Virtual University for Small and Medium-Sized Enterprises (VUSME)

www.vusme.org

Claire Kaukinen, BA, M. Ed, Director
Distance and Regional Programs
Confederation College of Applied Arts & Technology

Diana Koski, BA, B Ed, Manager
Curriculum & Distance Education Services
Confederation College of Applied Arts & Technology

VUSME: The Who, When, Where, and Why

The stakes are huge for small and medium sized businesses as information and communication technologies transform enterprise development, productivity and opportunity. Entrepreneurs ignore the changes taking place with Internet technology in the marketplace at their peril.

The concept for (VUSME) The Virtual University for Small and Medium-Sized Enterprises was the result of consultations with government and business organizations for advice on how to ensure that development spin-offs from new information technology reach down to the small business community level and not restricted to the major global corporations and governments. The need to bring populations in general up the Internet learning curve provides the growing momentum for the project.

Creating and building VUSME has provided interesting challenges in bringing together networks of people around the world. VUSME is essentially based on original contacts and friendships developed over the years in the International Small Business Congress. John Bulloch, as president of VUSME, is the key link in the organization.

The VUSME is a joint venture of educational institutions and business organizations dedicated to the application of Internet technologies for starting and growing companies and redeveloping companies. The goal is to provide an educational vehicle in the form of courses and case studies on how small firms and communities are using Internet technologies to do what they could not do before to stimulate new forms of business and economic activity. Moving new technologies across the spectrum of small-scale enterprises is a complex process.

There are many factors that make it difficult to reach this vast global community:

- the obvious size and complexity of the sector
- the differences in culture and education
- all the problems of access, any time, any place, anywhere
- the melding of education and training with real practical business situations and skills

- managing and administering a virtual site to meet the needs of varied client groups including the entrepreneur and students

There are a lot of people working together on this project to create real synergy. The educational institutions organize and write the content for the courses and the business organizations provide the marketing support and case study background. The instructional design team at Confederation College of Applied Arts and Technology in Canada provides the design standards and quality control. The Learning Institute for Small and Medium-Sized Enterprises (LISME), the not for profit corporate entity that markets VUSME courses, provides the computer network infrastructure and oversees project management.

The education partner institutions include:

- Confederation College of Applied Arts and Technology , Thunder Bay, Ontario, Canada
- The Small Business Advancement National Center at the University of Central Arkansas, Conway, Arkansas, USA
- The Center for Family Enterprise at George Washington University, Washington, District of Columbia, USA
- The University of St. Thomas, St. Paul, Minnesota, USA
- University of Calgary, Calgary, Alberta, Canada
- Barnsley College, Barnsley, South Yorkshire, UK

The organization participants include:

- The Canadian Federation of Independent Business
- The Forum of Private Business, UK

VUSME: What Are the Courses?

The VUSME courseware is organized to accommodate the needs of the business community and community development access centers with one-hour introductory level courses, seven available presently. These one-hour courses bring new and potential Internet users awareness of the power and potential of e-commerce and the world-wide-web and the basic skills to make sound decisions on their Internet strategies.

The five-hour courses are divided into two levels. These courses explore the various facets of the Internet and e-commerce in more depth with an emphasis on interaction, case studies, and web links. Tests are available for all of the five-hour courses for educational institutions who integrate these courses into their curricula.

To create the model and template for the courses, we brought together our expertise developed in the past five years in designing web-based learning, our research into the important features of effective learning using web technologies, research into tools and software to support web course development and delivery, and our many years of serving local, national and international business clients through the Northwest Enterprise Centre. Thus, the courses have a strong distinct look and feel and a high level of interaction. Navigation is consistent and logical. Graphics and interactive exercises motivate the learner and emphasize key concepts. The internet itself becomes the primary teaching tool by using the web not only as information and examples but also as real business resources for immediate implementation by the entrepreneur or business participant.

One of the Case Study approaches is unique in that the learner uses the website for analysis and the guide for discussion and resolution and is also introduced to the website business owners. Through an interview with the entrepreneurs, they learn their rationale behind the site design, their comments on the success of the site, and insight into what they might have done differently. A pattern is beginning to become apparent as we post successful stories of small business applications of Internet technologies: We can observe either an owner, partner or associate of the firm that is continuously striving to stay on the learning curve of the technology. Their websites provide real value added and useful links. Intelligent use of search engines, directories, and email seems to be more effective than traditional off-line publicity and marketing.

The Centre for Curriculum Design at Confederation College works in project teams both face-to-face and virtually. A typical team would include a content author from one of the educational partners, an Instructional Designer and a Web Designer. High level graphics or the inclusion of audio and video brings a multimedia expert to the team. Communication between the design team, content expert and the Web Master at LISME is facilitated electronically. The management team including the developers, meet occasionally face-to-face but conduct the day-to-day business and decision making virtually.

Putting together an organization that has cohesiveness and purpose without day-to-day social interaction is difficult and requires some form of organizational glue. The answer is a relationship where everyone is able to enjoy value proportional to their contribution. There are no sponsors and the only revenue comes from sale of courses, which places an incentive on everyone to work cooperatively to create a system that delivers quality, value-added and geared to volume products.

Introductory Courses (One-Hour)

Surfing The Net
Discover the Internet – a beginner's guide.

Doing Business on the NET
Find out how you can use the Internet to build your business.

Research Online
Explore new markets for your products and services.

Build a Web Page
Build your own web page in just 30 minutes!

The Death and Birth of the Middleman
Use the Internet to get rid of the Middleman – and to find new entrepreneurial opportunities.

Introduction to Electronic Commerce
What "e-commerce" is all about!

Introduction to Community Development

Level I and Level II Courses (5-Hour)

LEVEL I

Community Development I
Design community based social and economic development projects using the resources of the Internet.

E-Commerce: Business to Consumer
Build your consumer base by making your business website more effective.

E-Commerce: Business to Business
Find out to sell products and services online.

Intermediation
Find out how the Internet is bringing suppliers and users together.

Reintermediation
Find business opportunities in the new intermediary functions created by the Internet.

Enterprise Development I
Use the Internet to do business more efficiently and more profitably.

Trade I
Use the power of the Internet to find new markets.

Market Research I
Find out why the Internet can be your most effective market research tool.

To be completed August 1st, 1999:

- Introduction to Entrepreneurship
- Introduction to Business Planning
- Opportunity Knocks
- Entrepreneurship and You

LEVEL II

Enterprise Development II
Add value to your website to make it your most effective marketing tool.

Market Research II
Discover the Internet tools you need to mine market research gold.

Trade II
Learn how your business can profit from trade by maximizing your opportunities and minimizing your risks.

Marketing Over the Internet
Marketing and promoting your web-site.

Using Audio & Video on the Web
Using Audio and Video Techniques on the World Wide Web.

VUSME: How You Can Join Us

Courses are marketed via Distributors such as educational institutions, corporations, associations and development agencies of all kinds who purchase courses in various ways. Some purchase Access Id's and resell them. Others purchase unlimited access to a group of the courses that can be accessed through a secure access site. Educational institutions upon the completion of eight courses can provide students with a special Certificate designation, 'Certified Internet Entrepreneur'. VUSME will set up an individual website for each Institution using the courses as part of their postsecondary program delivery or through continuing education and customized training. The access Id's are valid for three years and the assignment of courses is managed at the site level. Teacher's manual, help line, and additional resource support is provided to educators at the Confederation College site.

The Internet has the potential to bring about a powerful transformation of wealth creation at the individual and community level. We are proud to be part of VUSME as we believe that through our global partners we will be a catalyst in making this happen.

Sample VUSME Online

Share the Power of Vusme with Your Colleagues

GO TO: **http://www.confederationc.on.ca/vusmedemo**

Contacts

Educational Institutions:

Jim Rapino, Dean
(807) 475-6363
rapino@confederationc.on.ca

Confederation College
1450 Nakina Dr, P.O. Box 398
Thunder Bay, ON P7C 4W1

Corporations & Associations

John Bulloch, President, VUSME
(416) 222-8022
jbulloch@vusme.org

Virtual University for Small and
Medium Sized Enterprises
4141 Yonge Street, #401
Toronto, ON M2P 2A6

CONFEDERATION COLLEGE
Education That Works

VU

Biographical Sketches

Claire Kaukinen is responsible for the development and delivery of alternate learning services including; Internet courses, video/telecourses (CCTV), videoconferencing, CDROM courseware, modularized courses; college Curriculum Design and Development, DACUM and Competency/Outcomes development, and Distance Education development and delivery for the college in Thunder Bay and 60 regional communities. She also leads in the training of staff for alternate delivery and educational change and the implementation of Innovation Projects and Strategic Initiatives. During her 25-year career in postsecondary education, Claire has been responsible for college policy on instruction, course outline development and General Education, as well as program management for postsecondary and non postsecondary programs and Adult Education and training in the Business, Applied Arts and Access divisions. Partnerships and special projects include the development of materials and training for literacy facilitators in Ghana, entrepreneurship materials for the Ukraine, curriculum analysis for the Canadian Aviation Maintenance Council of Canada as well as grants, contracts and projects with the government and private enterprise.

Address: Confederation College of Applied Arts & Technology
P.O. Box 398, 1450 Nakina Drive
Thunder Bay, Ontario, Canada
P7C 4W1
E-mail: kaukinen@confederationc.on.ca

Diana Koski, Manager, Curriculum & Distance Education Services, leads the Curriculum Design and Distance Education staff in instructional design and delivery of learner centred curricula specializing in areas using new technologies to develop and deliver the instruction. Responsible for a variety of projects for both internal and external client groups, she ensures the effective administration of the projects. As well, she organizes client training in instructional design and manages the sales of curriculum products. As manager of Distance Education, she plans and delivers over 150 courses in discipline areas as diverse as General Business, Critical Care Nursing, Early Childhood Education, Marketing, Entrepreneurship and Microcomputer applications. She has over 20 years' experience in Adult teaching, instructional design, and the initiation and management of projects.

Address: Confederation College of Applied Arts & Technology
P.O. Box 398, 1450 Nakina Drive
Thunder Bay, Ontario, Canada
P7C 4W1
E-mail: koski@confederationc.on.ca

Distance Education Policy in Post-Secondary Education: Nebraska as a Case Study

James W. King
University of Nebraska

Gwen C. Nugent
Nebraska Educational Telecommunications

Earl B. Russell
University of Nebraska

Dara Lacy
University of Nebraska

Introduction

In this paper, we report preliminary results on the status of distance education in Nebraska post secondary institutions. We highlight several key implications for distance education policy development in higher education.

We defined "policy" as "a written course of action adopted to facilitate program development in distance education." For example, statutes, institutional mission, procedures, guidelines, or regulations are policy documents; courses or syllabi are not policies. We surveyed the literature and developed this blended distance education definition:

- Distance education is a class of methods of instruction, either formal or non-formal, that place the learner apart in time and/or space from the teacher, or the learning and practice detached by space and/or time from the teaching and the instruction.
- To bridge the time and distance factors, learners and instructors use technology-based communication channels and media such as computers and associated networks, print, audio, cable, satellite, or videotape or combinations of these media.

The Problem and Methodology

In many if not most higher education environments, distance education courses and programs are emerging sporadically, without much guidance (Epper, 1999; King, Lacy, McMillian, Bartels, and Fredilino, 1998). To study this situation, we surveyed post-secondary institutions in Nebraska, including community colleges, the state college system, the state university system, and private, four-year independent colleges, to find out what distance education policies existed. We administered a mailed survey asking institutions for distance education policy statements.

Based on Gellman-Danley and Fetzner (1998) and Berge (1998), we constructed a "distance education policy analysis framework."(Table 1) to study the post-secondary policies.

Table 1. Policy Analysis Framework for Distance Education

Policy Area	Key Issues
Academic	Calendar, Course Integrity, Transferability, Transcripts, Student/Course evaluation, Admission standards, Curriculum/Course approval, Accreditation, Class cancellations , Course/Program/Degree availability, Recruiting/Marketing
Governance/Administration/ Fiscal	Tuition rate, Technology fee, FTE's, Administration cost, State fiscal regulations, Tuition disbursement, Space, Single versus multiple board oversight, Staffing, Existing structure versus shadow colleges or enclaves
Faculty	Compensation and workload, Development incentives, Faculty training, Congruence with existing union contracts, Class monitoring, Faculty support, Faculty evaluation
Legal	Intellectual property, Faculty, Student and institutional liability
Student Support Services	Advisement, Counseling, Library access, Materials delivery, Student training, Test proctoring, Videotaping, Computer accounts, Registration, Financial aid, Labs
Technical	Systems reliability, Connectivity/access, Hardware/software, Setup concerns, Infrastructure, Technical support (staffing), Scheduling, Costs
Cultural	Adoption of innovations, Acceptance of on-line/distance teaching, Understand of distance education (what works at a distance), Organizational values

(Adapted from Gellman-Danley and Fetzner, 1998; Berge, 1998)

Data were collected by leaders of the four Nebraska higher education systems (community colleges, four year state college system, private colleges and universities, and the four campus system of the University of Nebraska [UN]). We then analyzed the data from the more than 25 Nebraska, post-secondary institutions using the above framework.

Findings

Table 2 presents data for each sector (i.e., private, community college, state college, and UN) on the number of distance education polices by category of the framework/ policy arena, type of post-secondary institution, and individual campuses or systems policies.

Table 2. Number of polices by category, type of post-secondary institution, and individual campuses or systems policies

Category	Comm College[1]		Independent		State Colleges		UN		SECTOR TOTAL	
	Campus	System	Campus	System	Campus	System	Campus	System	Campus	System
Academic	7	2	5	7	4	4	33	3	46	16
Fiscal	3	0	1	2	4	2	11	1	18	5
Faculty	13	1	2	2	5	5	21	2	39	10
Legal	3	0	0	2	1	1	1	0	5	3
Student	6	3	1	1	3	2	20	5	26	11
Technical	8	1	3	6	0	0	10	1	21	8
Culture	1	0	0	0	1	0	7	0	9	0
Total	41	7	12	20	18	14	92	12	164	53

[1] Comm College (Community Colleges, *N* = 8), Independent (Independent Colleges, *N* = 11), State (State System, *N* = 3), UN (University of Nebraska Campuses, *N* = 4)

The UN campuses and system have the greatest number of total distance education policies (*N*=104) followed by community colleges (*N*=48), and then the independent colleges and universities and the state colleges (*N*=32). Independent colleges and universities have the greatest number of system level policies (*N*=20), mainly due to many distance education policies at one college that is linked to sister campuses in other states. Not surprisingly, the greatest number of campus level policies (*N*=92) are found across the four campuses of the University of Nebraska. By category, distance education policies were primarily found in academic (*N*=62), faculty (*N*=49), students (*N*=36), and technical (*N*=29) areas.

Overall, most distance education policy development focuses on academic issues. Within this policy arena there is an emphasis to assure course integrity. We did not know if accreditation issues drive this policy development, need for local course/degree approval, or political pressure. One continuing policy theme is ensuring equivalency of distance education programs and courses to that of regular on-campus instruction. This equivalency covers a wide range of issues, including class time, student services, prerequisites, and instructor qualifications. For example:

> From the State College System: "Instructors responsible for credit courses offered through telecommunications instruction must be faculty members or must meet the standards and procedures used by the institution for the appointment of faculty responsible for on-campus resident courses."
>
> From a Nebraska state college: "Carnegie class time equivalents will be the same as any course. That is, students will be expected to do fifteen hours of instructor generated work and at least thirty hours of homework per credit hour earned."

> From the Nebraska Community College Association: "Academic transfer courses offered within a high school setting will have identical course content, syllabus, and text as on-campus courses offered by the area community college."
>
> From a community college: "All students within the 25-country area served . . . must have the same services, the same options for continuing education, and the same choices of delivery methods as the traditional on-campus students."

Within the academic area, there are also many curriculum/course approval policies. Again, an emphasis is on academic quality.

Most policies in the faculty arena are in the compensation and workload area. The state college system adopted a comprehensive policy, basing additional compensation on the number of remote sites involved in a distance-delivered class: "Faculty teaching on interactive distance learning will be compensated at the rate of $250 per remote site." Other colleges have recognized the additional workload in a different manner: "In recognizing the extra effort in revising a course, an extra ¼ credit hour load per credit hour will be assigned for the first time a faculty member teachers a specific course in live, interactive mode." Other workload criteria included limiting the class size or number of remote sites.

Faculty training is also an area of policy development, and stipulations for faculty training ranged from general statements to very specific criteria. For example: "Instructor training, including system use and suggested teaching techniques, shall be requisite prior to teaching a course via the Distance Learning System." "The College will provide a minimum of 12 clock hours of formal training, including at least 8 hours in a live, interactive classroom setting."

Within the technical category, most policies fall in the general, hardware/software, and technical support areas. Student policies deal primarily with library access, followed by general, and computer accounts. Governance/Administration/ Fiscal policies deal primarily with tuition rates, administrative costs, and staffing. A major issue is whether distance education classes should carry the same tuition rate as on-campus classes. Reflective of the equivalency theme, many colleges have opted to keep the tuition the same: A characteristic policy in this area is "Students pay the same tuition and fees for distance education classes as for classes delivered onsite." There are few policies overall dealing with legal and cultural issues.

Discussion

Given the current state of our research, we can say:

1. Distance education practice is indeed ahead of policy development. Within institutions, units were offering distance education courses yet responded that they had "no policies to report at this time."

2. Written distance education policies appear to be more structured where collaborative efforts exist. Agreements apparently have to be put into writing so partners can understand and communicate the "rules" of participation.

3. Written distance education policies are more likely to be found higher up in the organizational structure than at the academic unit level from where distance education courses and programs are provided.

4. Several policy strategies have emerged: a. units and institutions develop their own policies within a larger framework or b. units appear to operate independently of larger distance education policy making efforts; c. units and institutions shape distance education policies to adhere to existing institutional policies.

In conclusion we can say that distance education programming in Nebraska, at this time, is very robust yet the policy area in the post-secondary setting has a way to go to provide the leadership needed for continuous, strong, well funded, well planned and systematic policy frameworks.

Acknowledgment

This project was sponsored in part by the University of Nebraska-Lincoln Agricultural Research Division. Project No. NEB-24-033.

References

Berge, Z. L. (1998). Barriers to online teaching in post-secondary institutions: Can policy changes fix it? *Online Journal of Distance Learning Administration, 1*(2). Available: http://www.westga.edu/~distance/Berge12.html (2/24/99)

Epper, R. M. (1999). Excerpts from *State policies for distance education: A survey of the states.* State Higher Education Executive Officers (SHEEO). Available: http://www.sheeo.org/sheeo/pubs-excerpts-from-technology-survey.html (3/31/99)

Gellman-Danley, B., & Fetzner, M. J. (1998). Asking the really tough questions: Policy issues for distance learning. *Online Journal of Distance Learning Administration 1*(1). Available: http://www.westga.edu/~distance/danley11.html (2/24/99)

King, J.W., Lacy,D., McMillian, J., Bartels, K., & Fredilino, M. (1998). *The policy perspective in distance education: A futures landscape/panorama.* Invited paper presented at the 1998 Nebraska Distance Education Conference. Lincoln, NE (September 28-29, 1998). Available: http://www.unl.edu/NN21/jking.html (2/24/99)

Biographical Sketches

James King: Associate Professor in the Agricultural Leadership, Education, and Communication Department, joining the department in July 1996. He is now teaching about and via distance education and new technologies courses. Dr. King graduated from Indiana University in 1981 with an Ed.D. in Instructional Systems Technology. He has worked at the University of Hawai, Indiana University, University of Southern California, and Mashed University (Iran).

Address: University of Nebraska
Lincoln, NE 68583-0709
E-mail: jking1@unl.edu
Phone: (402) 472-3022
Fax: (402) 472-5863

Gwen Nugent: Director of Education, Nebraska Educational Telecommunications. She directs all formal NET education activities including the design, production, and evaluation of course work delivered to Nebraska K-12, higher education, and corporate audiences. She was on the team that began the University of Nebraska-Lincoln's distance education efforts in 1986. This effort now encompasses 7 degree and many noncredit programs delivered worldwide using such technologies as satellite, web, fiber, and Instructional Television Fixed Service. Her Ph.D is from UNL with an emphasis on instructional design. Her interests are interactive technologies for active, collaborative instruction that is adaptive to learner needs and characteristics.

Address: Nebraska Educational Telecommunications
Box 83111
Lincoln, NE 68501
E-mail: gnugent1@unl.edu
Phone: (402) 472-3611

Earl Russell: Professor and Head of the Agricultural Leadership, Education, and Communication Department. He has been at the University of Illinois, National Center for Research in Vocational Education, the Ohio State University, and the University of Georgia. His Ph.D. is from The Ohio State University. Dr. Russell's scholarly interests are in policy development and program reform, distance education, change rientation, and youth development. He is co-director of a 3-year project entitled "Distance Education Policy Research: Organization and Administration."

Address: University of Nebraska
Lincoln, NE 68583-0709
E-mail: erussell2@unl.edu
Phone: (402) 472-2807

Dara Lacy: Research Assistant in the Department of Agricultural Leadership, Education, and Communication at UNL. She will receive her Master of Science Degree in Leadership and Human Resources with a specialization in Distance Education (Summer 1999). She plans to attend the University of Wisconsin-Madison to pursue a doctorate in Educational Administration. Her research interests have encompassed distance education policy, development of consortia, and Australian distance education programs.

Address: University of Nebraska
Lincoln, NE 68583-0709
E-mail: dlacy@unlgrad1.unl.edu
Phone: (402) 472-2807

Instructional Design Models and Distance Education

Mary Ann Kolloff, Assistant Professor
Eastern Kentucky University

Fred Kolloff, Assistant Professor
Director, Division of Media Resources
Eastern Kentucky University

Joyce Thomas, Associate Professor
Eastern Kentucky University

According to Gustafson and Tillman (1991, p.4), "instructional design involves systematically applying a set of principles to achieve effective, efficient, and relevant instruction". There is an increasing reliance on instructional design for the preparation of distance education courses. One factor is the a result of the availability of the distance course to potential enrollees in the off-campus "marketplace" of distance courses. This requires that the course be effective when compared with a myriad of similar courses from other providers. Another factor is the appearance of new teaching strategies that are being developed and used which complement distance learning approaches and technology. For example, educators can more easily accommodate different learning styles as well as learner-centered, problem-centered course designs with new technology. With this environment as background, this paper is intended to give examples of the current concerns and procedures in the development of distance education courses as well as insight into the obstacles currently confronting the faculty member preparing the distance course. This analysis contrasts actual practice with traditional categories and elements of instructional design models. These observations may be used, in turn, as a basis for drawing the practice of distance education and an instructional design process together to enhance their "fit" with one another.

Instructional Design Models

The instructional design process is usually represented by the use of a model. The comparison of models of instructional design by Andrews and Goodson (1995) incorporate Grooper's (1977) list of common tasks of instructional design model development. These tasks are paraphrased below:

- Conduct needs assessment
- Review alternatives to instruction
- Formulate system and identify constraints
- Determine cost
- Develop observable outcomes
- Develop pretest and posttests to match all goals and subgoals
- Determine skills and learning required
- Sequence goals
- Analyze learners
- Formulate strategy of instruction

- Select media
- Develop instructional materials
- Tryout and revise materials
- Develop installation and maintenance materials and procedures

The expectation is that these steps should be completed in a linear fashion prior to and during the course. However, often this is not the case. Rather, one could expect that some elements of the typical instructional design model are not accomplished at all. And, those that are accomplished may have been done so in a non-linear fashion. There are many reasons for omissions and randomness from both an institutional standpoint and an individual faculty member's perspective.

Institutional Considerations

For a course offered on campus only, the first four instructional design factors outlined above are usually determined by an individual or group (e.g., departmental curriculum committee) as it is being proposed for inclusion within the curriculum. In the institution's view, the "analysis of learners" and "tryout and revision of materials" are handled in a routine manner. For instance, a general profile of the institution's learners often suffices for learner analysis (e.g., ACT or SAT scores, cultural factors). Because of factors such as previous faculty assignments or load, administrators would expect the tryout and revision of course materials to be handled over a period of time, that is, after the course has been offered and in preparation for its next offering rather than a separate tryout and revision of specific materials prior to the course offering.

In distance education, on the other hand, the first four steps are examined more critically at the administrative level. Primarily driven by the potential costs and variety of students that may take the course, learner analysis becomes an important consideration. That is, administrators determine whether there are sufficient numbers of potential students to support the extra time required for faculty member's preparation of the course and to justify materials, equipment, and personnel that may be necessary to successfully offer the course. In distance education environments, there are concerns that have already been provided for in the on-campus environment. For instance, the distance education concerns might include location or establishment of distant sites, the sites' facilities and personnel to facilitate distance education classes, students' skills and/or personal equipment/service to access instruction. The distance environment may also present a greater variety of students because of the regional, state, national, or international reach of the course. As a result, the institution's standard student profile may not coincide with many of the distant students.

Another consideration is the task of selecting the medium. From an administrative view, factors such as the perceived need to quickly participate in a competitive distance learning market, popularity of the medium, the need to justify costs of equipment and support, or the apparent power of the medium often drive the use of a specific medium without necessarily considering the most appropriate medium or media for the content. As Welsh (1997, p. 164) notes: "Just as with past distance education technologies, the World Wide Web should not be seen as a panacea to the problems that afflict traditional education, but as an alternative, more or less useful depending on the educational context."

Faculty Considerations

Instructional design models offer an explicit and systematic approach for developing a course. Yet, there are questions about the complex interactions and environmental constraints which have been accommodated in the traditional on-campus course as a result of experience and support. For example, as situations develop in traditional class settings, the faculty member must mentally, and quickly, review learning theories, instructional design theories, classroom management theories, the structure of the content, teaching strategies, and the constraints of the delivery system in order to respond to a particular situation. This thinking process for the faculty member often follows an automatic and nonlinear approach to formulating a quick response to the situation. In contrast, teaching in a distance learning environment requires a new set of skills for most instructors and quick instructional decisions may no longer be made automatically. Therefore, the faculty member must prepare in the development phase for what has been second nature in the traditional classroom. This is especially important since teaching at a distance presents an increased possibility of failure for the faculty member. These considerations, then, should be integrated into the development phase and rightfully become elements of the design model. Five elements for consideration include: (a) instructor's philosophy of teaching, (b) time constraints on the faculty member, (c) learner analysis, (d) change in the delivery of the content as a result of distance learning technologies, and (e) technology selection.

Philosophy of Teaching

An instructor's beliefs and experience in teaching, to a great extent, will influence the design of the distance course. Articulating and/or writing a philosophy of a faculty member's teaching style, pedagogy, and learning is a portion of what might be termed "faculty analysis" in the instructional design process. What the faculty member believes to be effective will strongly influence the design of the course. This philosophy establishes the basis for student-instructor interaction, and responsibility for student learning. Often, these goals can be translated into wanting students to be critical thinkers of the content area, to take responsibility for their own learning, and to come to class prepared to engage in activities requiring high-order thinking.

Within this philosophy of teaching, faculty members may engage in the process of self-questioning considering aspects of the course. Examples of these self-questions may include the following:

- What is the content that must be covered?
- What are the basic components I am most concerned with?
- What is class time for? How can class time be used?
- How can I effectively tie together knowledge-base information with real-life, problem solving situations in meaningful contexts?
- How can I learn, then merge, different technologies into the course so the effectiveness and advantages of each technologies is enhanced, and the limitations of each individual technology is diminished by the advantage of using another technology?

Time as a Constraint

Time available for course design is not a factor in instructional design models. For instance, the number of different courses taught in a semester is a relevant question relating to preparation time for each course and the commitment that a faculty member may give to teaching at a distance. This time factor becomes a major variable in the faculty member's perception of the success or failure of distance learning courses in any medium. On the other hand, release time for preparation prior to the course offering can be negotiated.

Learner Analysis

Learner analysis is a critical variable in the instructional design process for the intended learning to occur. Often instructors will conduct surveys, or have students write why they enrolled in the course, but in-depth learner analysis rarely occurs. Here, in-depth learner analysis includes the determination of the learner's initial attitude toward the content and the delivery system as well as the daily changes in these areas. This analysis is needed in order to determine the internal conditions of learning. Faculty members design their courses by first arranging the learning environment, structuring the course content, and providing, what they believe, are motivational experiences. However, it is still the student's decision as to the degree of involvement with the course content and interactions during class time. As much as possible, instructors must analyze their learners on a daily basis through feedback via faculty-student interactions (e.g., individual meetings, e-mail, or phone conversations) and alter the course design to accommodate. The emphasis on learner involvement and interaction has come from such sources as the capabilities of computer software, the Internet, recognition of learning styles, and the views of constructivism. However, as Dede (1999, p.16) says: "While much is known about instructional design in classroom settings to facilitate affective and social interactions, many emerging media are so new that little is understood about the emotional and collaborative affordances they provide - and lack."

Change in Delivery of the Content

Teaching in distance learning environments doesn't change the content, the goals or objectives of the class. There is no question, however, that distance education does change the manner in which the instructional messages are delivered. The abilities of the different media to transmit information now allows the recognition and accommodation of differing student learning styles. In addition, enabling the learner-centered and problem-centered approaches are now possible to a greater extent than before. The challenge is to appropriately adapt content to fit the desired approach. What is required are "new tools that create powerful instructional interactions that lead to deep conceptual insights as well as the development of sophisticated problem-solving and research skills" (Siegel & Kirkley, p. 263).

In view of the possibilities of the learner-centered approach and the resources of the Internet, for example, the goals and objectives begin to be less ends and more boundaries or guideposts in the course. The instructor becomes less of a provider of information and more a guide and monitor. What the design model requires as developing outcomes and sequencing goals may be left to students and instructor to determine as each learner proceeds on a more or less individual route based on their experience and knowledge.

Technology Selection

As mentioned above, several factors influence the technology selected for delivering the course content. Obviously, the choice of a technology influences the design of the course. Ideally, an understanding of the attributes of the particular medium allows the appropriate medium to be selected since successful communication of content is dependent upon the right medium or media. This factor, coupled with student abilities in reading, writing, computer literacy, and independence as a learner, give the faculty member the choice to choose the appropriate medium. But, as expressed above, institutional factors often override the ideal situation. As a result, unlike the traditional instructional design sequence, the selection of media for distance courses becomes one of the first, if not the first, step in the design process.

Conclusion

It is suggested that current instructional design models do not necessarily reflect many elements that are a part of the institutional and faculty reality in the design of the distance education course. Many of the conditions are imposed and are not choices to be made as the typical instructional design model would suggest. For example, the institution imposes conditions that may be based upon the need to offer a broader variety of students access to distance courses, to be visible and/or to establish a niche in the distance learning marketplace, to compete with other distance course providers, or to justify resource expenditures. Other considerations are those of the faculty member. For example, an analysis of the faculty member's own educational philosophy becomes a strong factor in determining learner outcomes and instructional strategies. Likewise, factors such as time, continual learner analysis, message delivery, and technology are all elements that need consideration in course design. The design of the distance course has initiated some and emphasized other imposed institutional and faculty conditions. Therefore, it is necessary that educators become aware of imposed conditions, seek them out, and incorporate them into their instructional design models.

References

Andrews, D. H., & Goodson, L. A. (1995). A comparative analysis of models of instructional design. In G. J. Anglin (Ed.), *Instructional technology: Past, present, and future* (2nd ed.), Englewood, CO: Libraries Unlimited.

Dede, C. (1999). The multiple-media difference. *Technos, 8*(1), 16-18.

Gropper, G. L. (1977, December). On gaining acceptance for instructional design in a university setting. *Educational Technology*, 7-12.

Gustafson, K. L., & Tillman, M. H. (1991). Introduction. In L. J. Briggs, K. L. Gustafson, & M. H. Tillman, (Eds.), *Instructional design, principles and applications* (2nd ed.), Englewood Cliffs, NJ: Educational Technology Publications.

Siegel, M. A., & Kirkley, S. (1997). Moving toward the digital learning environment: The future of Web-based instruction. In B. H. Khan (Ed.), *Web-based instruction*. Englewood Cliffs, NJ: Educational Technology Publications.

Welsh, T. M. (1997). An event-oriented design model for web-based instruction. In B. H. Khan (Ed.), *Web-based instruction*. Englewood Cliffs, NJ: Educational Technology Publications.

Biographical Sketches

Dr. Mary Ann Kolloff is an assistant professor in the Department of Curriculum and Instruction at Eastern Kentucky University (EKU). Her responsibilities include teaching technology and literature classes for library science graduate students. She teaches using two-way interactive video and web-based instruction. She received her Ed.D. in Instructional Systems Technology from Indiana University; Ed.S. in Instructional Systems Technology from Indiana University; M.Ed. in Special Education from National-Lewis University; and B.S. in Child Development and Family Life from Northern Illinois University.

Address: Department of Curriculum and Instruction
521 Lancaster Ave.
Eastern Kentucky University
Richmond, KY 40475
E-mail: elekollf@acs.eku.edu
URL: www.curriculum.eku.edu/faculty/KOLLOFF/
Phone: (606) 622 3086
Fax: (606) 622-[illegible]04

Dr. Fred C. Kolloff is Director of Media Resources and Assistant Professor in the Department of Mass Communications at Eastern Kentucky University (EKU). He has been with EKU since 1969. In his position part of his responsibilities include conducting faculty workshops, training, and evaluation of two-way interactive video and satellite distance education courses. He received his Ph.D. in Instructional Systems Technology from Indiana University, M.A. in Communication Arts from Michigan State University, and B.A. in Speech and Theatre Arts from Kalamazoo College.

Address: Perkins 102A
521 Lancaster Ave.
Eastern Kentucky University
Richmond, KY 40475

E-mail: dmrkollf@acs.eku.edu
Phone: (606) 622-2474
Fax: (606) 622-6276

Dr. Joyce Harris Thomas is an associate professor in the Department of Curriculum and Instruction at Eastern Kentucky University (EKU). She has been on the faculty since 1993 and teaches several courses in library science. She has taught using two-way interactive video. Before coming to EKU, she was the director of a public library, an acting and an assistant director of media services in a metropolitan school district, a high school librarian and a documents librarian for a state library. She received her masters in library science from the University of Kentucky and her doctorate in education from Michigan State University. She has presented at numerous state, regional, and national conferences.

Address: Department of Curriculum and Instruction
521 Lancaster Ave.
Eastern Kentucky University
Richmond, KY 40475
E-mail: elethoma@acs.eku.edu
URL: www.curriculum.eku.edu/faculty/Thomas/
Phone: (606) 622-8086
Fax: (606) 622-2004

On the Way to the Forum
An Online Business Strategy for 2006

Gregory M. Lang, Director
Media & New Technology Studies
University of Toronto, School of Continuing Studies

Introduction

The School of Continuing Studies at the University of Toronto has been in operation for over one hundred years, and providing distance learning opportunities for over fifty years, some with video and audio enhancements. With the continuing evolution of technology and the changing demands of our customers we recognized the need to "think digital." After a two-year applied research project named Carrier Pigeon, we concluded that we should enter this new market cautiously by continuing to evolve the services and products we traditionally provide. Carrier Pigeon highlighted many of the challenges that must be confronted to succeed online, including a large capital investment, and was the genesis of our current online strategy. Our learning from Carrier Pigeon is best summarized by the second last paragraph of the Executive Summary of the report.

> However inspiring and seductive computer mediated interaction is, there continues to be the danger of limiting our concerns to the physical design; to be overly interested in the delivery mechanisms and interfaces while neglecting the content material to be learned. We understand on academic, business, and technical grounds, that for optimal learning to occur, it is the complex integration, not the simple balance, of interface and substance that will engage the learner at various cognitive and physical levels of interaction. And it will be the learners' ability to apply their learning that will engage their customers and corporations.
>
> Dr. Mary Cone Barrie, Director
> School of Continuing Studies 1997

The School of Continuing Studies has a strong tradition of responding to customer needs but intrinsic to those needs is our dedication to Pedagogy. Within the context of both of these commitments we decided that we should continue to personalize and customize our products and services to meet the new and future needs of our customer community both off and online. The high capital investment required for online courses provided the framework for how we determined our next steps. After extensive strategic thinking and consideration we developed our online strategy and the tactical means: Consolidate the schools existing and future technology based courses, enhancements, customer service business processes, and information technology components into an integrated whole.

The Web Forum

The Online Strategy

To provide a personalized and customized learning experience to our community, whether current or new, without undue investment or business risk, but with the assurance that if industry projections of a $17 billion on-line education market come to fruition, we have prepared ourselves to enjoy a significant share of that market.

The Forum includes:

On-line courses (both existing and new, on case-by-case basis)
An online environment, which students access upon registering, to manage and/or complete their course work.

Course enhancement environments (both existing and new, on case-by-case basis)
An online environment, which students access upon registering, to manage and/or complete their course using the on-line enhancements, which may include; URLography, reading list, course outlines, weekly course updates, chat rooms, news groups, threaded discussions, instructor/mentor access, etc.

Dynamic educational links database (Instructor/client driven, including commentary)
An online environment where all SCS educational resource links are stored and indexed for quality, by the School, instructors, and students. From which new courses or modules can derive appropriate links by selecting the appropriate keywords and references. Including auto-check of link validity prior to course start. The database stores all course and module links in a single manageable environment to which access may be sold on a subscription or usage basis.

Course modules (as derived from existing courses and enhancements)
An online environment in which appropriate course components are stored for sale-on-demand. A customer may access and complete the component parts of a course to meet their personal and immediate information and training needs. The School manages the students' history and path to identify if and when they have successfully completed a significant portion of an existing course or newly identified path of study. Upon matching of a student with specific requirements, the student may register and take only specific information or training modules, choosing whichever ones they wish resulting in a fully customised learning experience

New course / instructor environment (a means of short listing qualified candidates)
An online environment in which existing and potential instructors can access and input their course proposals, and modules of learning that they can or would like to teach. Course or module proposals may be posted as education or training opportunities available to customers, and need not be developed until interest or registrations are high.

New or potential learner environment (to gather warm leads and engage potential customers) An online environment into which existing and potential students enter free of charge in exchange for their personal information. They can peruse approved potential course offerings and module offerings, and identify what they would like to take, and how, including the medium, language, learner style, etc. This environment can dynamically manage waiting lists by identifying growing interest in courses and providing automatic notice to the program administrator and all suppliers or stakeholders in the course.

Instructor/facilitator development environment (a substitute for consultation) An online environment in which existing instructors can network with their peers, access and add tips and hints for managing adult learners, and access the course and module archive to facilitate the renewal or development of new courses or modules. The School increases its quality assurance management of instructors through regular postings, dialogues with instructors, and an acknowledgment of the instructors' regular participation and contributions to this environment.

Minimum Risk and Maximum Return on Investment

The Web Forum is a self-sustaining environment that derives its value specifically from:

- Warm student prospects (versus mailing lists, research, environmental scanning, etc.)
- Decreased cost for the identification and management of new instructors
- Economies of scale in the consolidation of all on-line components at SCS
- Decreased cost of identifying potential new course offerings
- Decreased course development and renewal costs by leveraging existing course components
- Increased customer loyalty and retention
- Decreased professional development costs for instructors, facilitators, and mentors
- Increased quality assurance over instructors, facilitators, and mentors
- Increased revenue from sale of training and information modules
- Increased revenue from sale of access to educational Links Database
- Decreased risk of loss of revenue and a potentially large share of a $17 Billion market

Conclusion

Through the identification of our own best business practices, customer communications, and resource management processes we have developed an online strategy which generates efficiencies and delivers value to the customer. Further, this strategy requires no major investment and prepares us to benefit from the projected $17 billion market in 2006.

Reference

Barrie, M. C., & Howarth, L. (1997). *Carrier pigeon project*. Toronto, ON. University of Toronto, School of Continuing Studies & Faculty of Information Studies.

Biographical Sketch

Gregory Lang is the Director of Media & New Technology Studies at the University of Toronto School of Continuing Studies. He holds a master's degree in Business Administration from Dalhousie University. Gregory has been involved with the School since September 1996: as an external Consultant through Coopers & Lybrand and then through Caldwell Partners; as an Associate in Sales & Outreach; as a Project Manager; and as the Acting Director of Media & New Technology Studies prior to accepting the appointment as Director in 1998. At SCS Gregory has enjoyed many successful roles including outreach and sales, project management, and currently as Director of Media & New Technology Studies. He contributed to the School's distributed learning research project "Carrier Pigeon" through direct management of the digitisation of one module, development of the financial models for on-line learning, and participated in a variety of conferences and symposia relating to distributed education. As project manager for the development and deployment of the School's web site Gregory was educated in the intricacies of intellectual property rights in the digital environment. Through his contacts with corporate allies and potential clients, Gregory has amassed an extensive understanding of the needs of corporate educators, including methodologies employed. Gregory has developed and presented a "Virtual University" concept to educators, corporations and other communities of interest on a variety of occasions. In his current role, Gregory is managing a Certificate in E-Learning and a variety of courses which include on-line components to enhance the learning process. Further he has developed the basis for an on-line course development and delivery compensation package which draws on the protocols of both the broadcasting and publishing industries. As a management consultant with Coopers & Lybrand, Gregory worked on a variety of projects, including the development of training programs replete with student and instructor manuals. Gregory also worked in the Centre for Excellence in Customer Satisfaction and among other activities aided in the development of the "Benchmarking Corporate Excellence" database, which used knowledge management and pedagogical principles in its design and presentation.

Address: 158 St. George St.
Toronto, ON. Canada
M5S 2V8
E-mail: gregory.lang@utoronto.ca
URL: learn.utoronto.ca
Phone: (416) 978-4641
Fax: (416) 978-5673

Education, Technology and Politics Across Two Continents: Strategies for Success

Faye L. Lesht, Assistant Head for Program Development
Division of Academic Outreach, Office of Continuing Education
University of Illinois at Urbana-Champaign

Fred E. Mastny, Associate Head for Distance Education
Division of Academic Outreach, Office of Continuing Education
University of Illinois at Urbana-Champaign

Chrisann Schiro-Geist, Professor
Department of Community Health
College of Applied Life Studies

Introduction

This paper describes the project on which our conference session is based. During the mid-1990's discussions ensued between liaison of those working in the field of rehabilitation in Ireland and a faculty member in rehabilitation on the Urbana campus of the University of Illinois. These discussions led to the offering of an off-campus Master of Science degree program in Rehabilitation with a concentration in counseling. The program was offered using a combination of instructional delivery methods.

The program was a joint venture between the University of Illinois at Urbana-Champaign, Department of Community Health, the University's Office of Continuing Education, Division of Academic Outreach, and the Tipperary Rural and Business Development Institute (TRBDI). The University was not previously affiliated with the Institute. This represented a new venture for both parties. The program was conducted over a period of two years including two summers. Students enrolled in the program were adults with several years work experience. Courses were offered on Fridays and Saturdays. In all, 16 students matriculated.

Background

In Ireland, Rehabilitation is not organized as a profession nor does legislation similar to the Americans with Disabilities Act exist. In fact, "in Irish society people with disabilities are believed to constitute one of the largest socially excluded groups" (Healy, 1998). At the same time, recent socio-economic and political forces within the Irish society have placed the field of rehabilitation in a new light. To that end, the TRBDI was interested in assuming a leadership role in improving the professionalism of rehabilitation. The University of Illinois' master's degree program in rehabilitation, with a concentration in counseling, was seen as a vehicle toward building a recognized rehabilitation profession in Ireland and possibly within the European Union.

Discussions between key leaders in Ireland interested in advancing rehabilitation and campus faculty ensued over the period of a couple of years. The program was offered on a trimester basis and completed within two years. Courses were offered on a Friday/Saturday schedule with consideration given for the 6-hour time difference between locations.

Technical Support for the Ireland Rehab Program

The Division of Academic Outreach at the University of Illinois has been involved in media-based distance education for over 30 years. The Department of Rehabilitation had begun using two-way interactive video conferencing to teach from campus to the western suburbs of Chicago. This positive experience led them to believe that they could offer instruction to other locations outside the State of Illinois.

During this time, discussions ensued between campus and Ireland-based representatives about creating a professional program in Rehabilitation in which distance education would be used to deliver some of the instruction. The project director in Ireland came to Champaign to discuss the different distance education technologies that the University of Illinois used to support off-campus instruction.

In discussions with the project director it was decided that a site visit to Ireland to look at the technical infrastructure needed to support the distance learning technologies was needed. A trip to Ireland revealed that we should limit the technologies used in the program and concentrate upon two-way interactive video conferencing and use the Internet for posting information or transferring files. Because of telecommunication costs for transatlantic lines, the standard transmission used was a single ISDN line for 128K video.

Initially the room used in Ireland and the video codec used were both sub-standard. After the first semester the decision was made to improve the room acoustics and to upgrade the video codec which improved both the quality of the audio and the quality of the video. Netmeeting was used too with application sharing to augment the video with high quality, high-resolution graphics. Each class had a web site and/or a web forum for posting of handouts or other class materials.

Academic Protocol

The degree program was offered as part of a contractual arrangement between the University and TRBDI. Prior to initiating the contract the TRBDI conducted an assessment within the rehabilitation community of Ireland for program need and potential contribution to the profession. Based on these results they were interested in proceeding with the program. At the same time, the department of community health was required by University standards to write a proposal which needed to be approved by the department head, dean of the College, and the University's Graduate College Committee on Extended Education and External Degrees. As a result of this approval process, members of the TRBDI administrative staff came to the Urbana campus to formally sign the letter of agreement for the program.

A pilot course was offered during spring semester of 1997. This course allowed students to become familiar with the prospective program, its faculty and the use of technology for the program as well as for the faculty to become acquainted with prospective students and use of technology for delivery.

A rigorous process of identifying and screening potential applicants ensued, primarily coordinated by TRBDI but in cooperation with the University. It was very important to hold discussions with International Admissions to ensure that appropriate policies and procedures were followed. Ideally, applicants would be admitted prior to program initiation.

Pedagogical Considerations

Teaching faculty for this program were either full-time campus-based faculty or departmentally approved adjuncts. For full-semester length courses (4 hour/1 unit) the first weekend of such a course was conducted on-site in Ireland. For half-semester type courses (2 hour or ½ unit) faculty usually conducted the entire course on-site, however would often use guest lecturers from Chicago or campus who would present over interactive video.

Faculty did not necessarily have experience teaching using distance education so training as well as assistance adapting materials for the distance education portion of the program was necessary. At the same time, it was imperative that faculty revise their course content to make it relevant in an Irish context. This meant that faculty needed to become familiar with aspects of Irish society, including in some cases legislation, in order to provide adequate culture proofing.

To that end, the project director in Ireland worked closely with faculty to assist with a) culture proofing and b) site-based activities in the classroom. The project director attended each class session to serve as facilitator and academic site coordinator.

Administrative Dimension

The Division of Academic Outreach, Office of Continuing Education administered the budget for this program. However, the budget was very much a negotiated item. The original budget proposed was viewed as too high by TRBDI, yet in the end it proved close to accurate. A number of "hidden" costs were emerged including federal express packages, additional travel that was necessary for pedagogical reasons and technical support not originally factored into the budget. In order to proceed with the program, the budget was amended. However, it is very important when considering such a program to weigh the costs, benefits, this includes academic considerations, and budgetary parameters prior to proceeding with a letter of agreement.

A letter of agreement was written and signed. Such a letter should include the signature of key administrative officers responsible for each organization, not just the program.

Political Dimension

Working across cultures allows for opportunities as well as for challenges. Each entity was unfamiliar with the other and thus trust needed to be established by a variety of parties, not simply those involved directly in negotiations. At the same time, there are social, economic and political factors that may enter into the equation on both sides. Open, clear and direct communication is very important to program success.

Summary

The experience of offering a master's degree program in rehabilitation to an Irish-based constituency was both a rewarding and a learning experience for all concerned. That such a process requires time prior to final arrangements being confirmed is of utmost importance. It is possible to offer a high-quality program using a combination of delivery methods regardless of location. It must be emphasized that as with other similar programming, careful planning along with socio-political and technical considerations must be addressed early in the endeavor.

Reference

Healy, M.., Bruce, A., & Crandall, L. (1998). *The use of video-conferencing in healthcare education: The case of the master of science degree (M.S.) in rehabilitation counselling from the University of Illinois to Irish based students.* Healthcare Informatics Society of Ireland, 3rd Annual Conference and Scientific Symposium.

Biographical Sketches

Faye L. Lesht is Assistant Head for Program Development, Division of Academic Outreach, Office of Continuing Education, University of Illinois at Urbana-Champaign. She oversees the program development process for off-campus and community credit courses and degree programs. She assisted with the administration of the master's degree program in Rehabilitation offered in Ireland.

Address: 302 E. John Street, Suite 1405
Champaign, IL 61820
E-mail: f-lesht@uiuc.edu
Phone: (217) 333-3061
Fax: (217) 244-8481

Fred E. Mastny is the Associate Head for Distanced Education, Division of Academic Outreach, Office of Continuing Education, University of Illinois at Urbana-Champaign. He developed the Distance Education Support unit at Illinois and directs a wide range of distance education services. He oversaw the technical aspects of the off-campus master's degree program offered in Ireland.

Address: 302 E. John Street, Suite 1405
Champaign, IL 61820
E-mail: f-mastny@uiuc.edu
Phone: (217) 333-3061
Fax: (217) 244-8481

Chrisann Schiro-Geist is Professor, Department of Community Health at the University of Illinois at Urbana-Champaign. In addition to her research and teaching responsibilities, she initiated the off-campus master's degree program in rehabilitation offered within Illinois. She was instrumental in the development and coordination of the offering of a master's degree program in Ireland using various delivery formats.

Address: 120 Huff Hall, 1206 S. Fourth Street
Champaign, IL 61820
E-mail: chrisann@uiuc.edu
Phone: (217) 333-4623
Fax: (217) 333-2766

Trends in Online Education:
Where We've Been and Where We're Headed

Nancy M. Levenburg
Visiting Instructor, UCLA and California State University-Hayward
Department of Marketing, Grand Valley State University

This paper presents a perspective which maintains that a well-documented marketing concept offers a tool for understanding enrollment patterns in online education. It is called the product life cycle.

Product Life Cycle

Quite simply, the product life cycle concept holds that a new product (good or service) innovation moves through a series of fairly predictable stages from development and testing to introduction, growth, maturity, and decline. The introduction period is characterized by slowly growing sales as the idea takes hold among innovators. This period is also typified by frequent product modifications and limited distribution, among other factors. Marketing and advertising costs are often high; profits are usually negative.

If we look at the history of online education enrollments on an industry-wide basis, it is probably accurate that "total sales" (enrollments) have been growing at a fairly slow pace. This is normal; the literature on the adoption process and diffusion (the process by which the adoption of an innovation spreads) indicates that new concepts are first accepted by "innovators," those individuals (typically less than five percent of the population) who are willing to accept risks, tend to be above-average in education and income levels, and are exposed to outside influences (e.g., scientific sources and experts) in forming opinions and making buying decisions. In fact, the number of graduate-level degree programs offered online may reflect the fact that educational providers have chosen this specific group as their primary target market.

Many of these learners are returning adults. They are "generally older, many have families, and they can't cluster in the student lounge anymore and chat" (Oblinger, as cited in Learning Technologies Report, 1999), so are time- and location-bound, desiring to advance their education and career opportunities yet constrained by job and family responsibilities. For this group of educational "consumers," the ability to participate in traditional educational opportunities that demand their physical presence may be either highly inconvenient or physically impossible. As a result, the ability of distance learning technologies to extend access to learners through time- or location-shifting is important. In fact, according to a 1997 U.S. Department of Education report (cited by Burdman, 1998), increasing student access by making courses available at convenient locations was rated as very important by 82 percent of U.S. institutions of higher education. Further, Burdman reports that in a recent survey conducted by the Education Commission of the States, a majority of governors (34 of 35) said that technology was their first-choice strategy for improving access to education, placing a high value on technologies that enabled students to take classes anytime, anywhere.

From market introduction, a new product moves into a "growth" stage, which is characterized by steeply increasing sales. Profits also turn from negative to positive. During this stage, the new product concept takes root among "early adopters." Early adopters may be influenced in their purchasing decision (online enrollment) by innovators with online education knowledge and experience. They typically rely more on word-of-mouth recommendations than innovators do in forming opinions. In fact, according to Lamb, Hair and McDaniel (1994), they are "more oriented to the local community, in contrast to the innovator's worldly outlook."

During the market growth stage, many competitors enter the market; in fact, depending on the perceptions associated with industry profits, they may be very "quick to the trough," as one Continuing Education administrator phrased it. A quick look through the databases published by at The Open University's "International Centre for Distance Learning (www-icdl.open.uk), the Globewide Network Academy (www.gnacademy.org) or the University of Texas' World Lecture Hall (www.utexas.edu/world/lecture) reveals hundreds of educational providers offering thousands of online courses. The latter phase of this growth stage, in fact, is sometimes referred to as "saturation," since the market is, literally, saturated with providers.

In fact, new telecommunications technologies have been introduced in recent years and interest in using them for education and training purposes is exploding (Black, 1998; Dugan, 1998; Lammers, 1998; Mello, Jr., 1999; Ouellette, 1998; Schank, 1998). As one example, UOL Publishing, a provider of classroom training for business, experienced a 1,000 percent growth in its number of online learners between 1997 (8,000 students) and 1998 (80,000 students) and an equally impressive growth in revenues (20 percent per quarter) during the same time period (Mello, Jr., 1999). Further evidence of the growth in popularity of distance learning courses is provided by the market research firm IDC in its "Online Distance Learning in Higher Education, 1998-2002" report. According to it, an estimated 2.23 million students will be enrolled in distance learning classes by 2002, attributed largely to the growth of the Internet ("Long Term Opportunities in Distance Learning," 1999). Finally, International Data Corp. (IDC) reported that the Internet-based training market "ballooned between 1996 and 1997 from $2 million to $91 million" and projects it will increase to $1.04 billion by 2000 (Dugan, 1998). As competition intensifies, the product's price (and related profits) may fall. Some providers may choose (or be forced) to withdraw from the market; however, we see no signs of this yet in online education.

Therefore, it is my opinion that online education has just recently entered the growth stage of the product life cycle. During the growth stage, the promotional focus usually shifts from stimulating primary demand (enroll in online classes) to selective demand (enroll in online classes from XYZ University). In fact, I will make a prediction concerning methods of competition in online education markets: I believe that as providers' offerings proliferate over the next few years, they will be differentiated based on three factors: (1) reputation of the institution; (2) price, or tuition costs; and (3) speed—time required to complete a program or course.

Discussion

The rate at which new product innovations are adopted (and the related slope of the product life cycle curve during the growth stage) depend on several factors, including the relative advantage that the innovation has over existing alternatives, trialability of the product, compatibility with existing attitudes and beliefs, observability, and complexity. In general, the more that the innovation is viewed as superior to existing alternatives, the easier it is to understand and try, and the greater the compatibility with existing attitudes and values, the faster will be the adoption process. So in the case of online education, since taking classes that are not delivered "on ground" is a substantial departure from traditional delivery methods/models in higher education, compatibility and perceived complexity could be factors that could slow the rate of adoption of online classes. This may be particularly relevant if online education is perceived as somewhat complex by the traditional educator, since s/he is in a position to influence student interest and enrollments.

Perhaps some institutions' reluctance to give hearty support to online education also offers an explanation for any less-than-hoped-for enrollments. If the "salespeople" (administrators, faculty members, support personnel) are not themselves sold on the concept, why should the customers be? The fact is that many faculty members remain skeptical about the quality of online education, leery of anyone who has online credentials, and, in general, espouse lukewarm support for the process . . . at best. Since prospective online learners are dependent on educational providers to inform them about their new offerings, if that information is absent or negative, it is doubtful that prospective new learners will muster enough interest to enroll in online classes. As an analogy, I never knew that I had a need for cruise control in my car until I drove a car with cruise control. It is up to educational providers to furnish this informational experience, and in this respect, FAQs about online classes (e.g., www.baker.edu) and online course previews (e.g., www.cmich.edu) are excellent promotional tactics.

In conclusion, as with retail sales via the Internet, doom-and-gloom forecasters predicted that it would never happen. The 1998 holiday season, however, proved them wrong, demonstrating that consumers *are* shopping online and sales and profits *can* occur via the Internet. The same is true with online education, and the fact that tens of thousands of learners are now enrolled in online courses demonstrates that online learning is here to stay. Doom-and-gloom forecasters should remember that such innovations as the automobile, airplane, telephone and computer were once thought to be "dead horses," too.

As a result, perhaps the question to ask is this: If we are, in fact, at the beginning of the growth phase of online education's product life cycle, how ready and well-positioned will an institution be to compete when the competition *really* heats up?

References

Black, D. (1998, September). Live and online: A WBT primer. [Online]. *Training & Development*. Available at: http://proquest.umi.com/pqdweb?ReqType=301&UserId=IPAuto&Passwd=IPAuto&JSEnabled=1&TS=922222145.

Burdman, Pamela. (1998, July 20). Classrooms without walls: More students are taking college courses online. [Online]. *San Francisco Chronicle*. Available at: http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/1998/07/20/MN87525.DTL&type=tech_article (July 20, 1998)

Dugan, S. (1998, Sept. 7). Internet fuels training market. [Online]. *InfoWorld*. Available at: http://proquest.umi.com/pqdweb?ReqType=301&UserId=IPAuto&Passwd=IPAuto&JSEnabled=1&TS=922222145.

Lamb, C. W., Jr., Hair, J. F., Jr., & McDaniel, C. (1994). *Principles of marketing* (2nd ed). Cincinnati, OH: South-Western, 321.

Lammers, D. (1998, September). School's back in session. [Online]. *Facilities design & management*. Available at: http://proquest.umi.com/pqdweb?ReqType=301&UserId=IPAuto&Passwd=IPAuto&JSEnabled=1&TS=922222145

Learning Technologies Report. (1999, April). [Online]. *The node: Learning technologies network*. Available at: http://node.on.ca/ltreport/april1999/

Long-term opportunities in distance learning. (1999, March 24). [online]. *ITT Connection 1*, 7. Available at: http://www.itttrain.com

Mello, Jr., J. P. (1999). UOL abandons the classroom. *Inside Technology Training 3*, 3, 7.

Ouellette, T. (1998, Apr. 13). Corporate training programs go to college. [Online]. *Computerworld*. Available at: http://proquest.umi.com/pqdweb?ReqType=301&UserId=IPAuto&Passwd=IPAuto&JSEnabled=1&TS=922222145.

Schank, R. C. (1998, December). Basic training. [Online]. *Chief Executive*. Available at: http://proquest.umi.com/pqdweb?ReqType=301&UserId=IPAuto&Passwd=IPAuto&JSEnabled=1&TS=922222145

Biographical Sketch

Nancy Levenburg is a Visiting Instructor at California State University (Hayward) and University of California, Los Angeles (UCLA), teaching courses for each via the Internet. She is also a Visiting Professor of Marketing at Grand Valley State University in Grand Rapids, Michigan, and a partner in Distance Learning Dynamics, a distance learning consulting and training firm located in Battle Creek, Michigan.

Address: Department of Marketing
Grand Valley State University
L.V. Eberhard Center, Suite 718
301 W. Fulton Street
Grand Rapids, MI 49504
E-mail: levenbun@gvsu.edu
URL: http://www.dldynamics.com
Phone: (616) 771-6811
Fax: (616) 458-3872

Convergence:
Strange Footprints to Virtual Universities

Jonathon D. Levy, Executive Director
Office of Distance Learning
Cornell University, Ithaca NY USA

A new model for technology-enabled worldwide partnerships between business and higher education is presented. Examples of the emerging hybrid model combining both corporate and traditional university education are presented as applied examples of the theoretical model:

- *continuing medical education on the Internet delivered to 5,000 doctors affiliated with twenty hospitals; and*
- *a global course combining executives and graduate students that merges synchronous and asynchronous delivery, ISDN and Internet video and web technologies delivered to ten corporations and four universities over four continents.*

Both examples are illustrated with video clips and web demonstrations of convergence media, including Internet streaming video used both synchronously and asynchronously.

A functional convergence is taking place in the field of education. Distance learning is creating a new model for education characterized by a convergence of media, program platforms, delivery modalities, and pedagogies. The same drivers that fuel this convergence also are creating a new hybrid of education that is dissolving the boundaries between business education and traditional education. This convergence is both predictable and unavoidable, a relentless natural phenomenon that is paving the way for a new model of collaboration between universities and businesses.

Gnomons

A "gnomon" is a known, fixed point of reference by which all else can be measured and understood. To understand where the distance-learning market is headed, it is useful to have a gnomon, a point of reference, to understand how we got to where we are. This presentation sets the context for the enormous economic and structural changes taking place in the field of education.

"Lo" is the first message sent on the Internet. It was an accident; a premature hit of the return key when typing "LOGIN." But "Lo" also means "behold!" The explosion in electronic communications technology can be understood as the most recent display of human evolution. The ultimate purpose of the network can be understood as linking individual awareness with global consciousness. Its defining characteristic is "convergence," the discovery of unity within diversity, the essence of the concept of uni-versity.

"Virtual" implies all possibilities, the unmanifest state of a phenomenon. In quantum mechanics, the virtual state of a system is the unified field, from which all possibilities spring. Convergence is the phenomenon of intelligence seeking out its own source, as the differences between manifestations of life are increasingly found to share a common origin.

In this Age of Convergence, apparently separate and unique facets of life are found to be of singular origin. This applies as much to theory as it does to practice, and is the reason why "traditional" and "non-traditional" education are increasingly found moving toward each other. It is the natural progress of human evolution, a tidal movement from the field of boundaries (time, space) to the field of unbounded knowledge and awareness.

This trend toward the increased use of intelligence and the decreased use of brute force began with the first use of tools, became obvious 11,500 years ago with the Agricultural Revolution, matured with the Industrial Revolution, which in turn evolved into the Information Revolution. At each stage of growth of human intelligence, the principle of "doing less but accomplishing more" became more obvious.

At each stage, stronger and more robust networks of communication (roads, telephone, television, Internet) created greater unity of awareness, and greater awareness of unity. The boundaries that once shrouded diverse cultures with veils of mystery are now largely dissolved, just as the differences between different spheres of life (work, school, home) are now disappearing before our eyes. This trend toward convergence of boundaries is now the cause of considerable attention in the field of education, a field largely unchanged for hundreds of years.

The boundaries of time and space, and the boundaries between "the town" and "the gown" are now giving way to a new hybrid educational phenomenon, enabled by new and robust communications technologies and networks.

Distance learning is not a strange new development. Indeed, according to the theory of convergence, it is the next logical step of human progress. When viewed as the most recent of a sequence of events in the inevitable unfoldment of human intelligence, distance learning's relentless qualities become somewhat more predictable. Sir Arthur Stanley Eddington (1882-1944) foresaw this event in 1920 in *Space, Time and Gravitation*:

> We have found a strange footprint on the shores of the unknown. We have devised profound theories, one after another, to account for its origins. At last, we have succeeded in reconstructing the creature that made the footprint. And lo! It is our own.

Edward O. Wilson's recent book *Consilience: The Unity of Knowledge*, argues that science is beginning to piece together one "consilient" or interconnected picture of nature "that includes everything from dead atoms to warm, living flesh." But science doesn't have a lock on convergence. It is found in all fields of life, and education is no exception.

Distance Learning as a Subset of the Evolutionary Emergence of a Unified Field of Knowledge

Everywhere in our environment we are witnessing a grand unification unfolding, a seemingly natural progression toward convergence of historical boundaries. For example:

Social and Economic Convergence

- Home
- Work
- School
- Travel

Elements of each are now found in the others: we take our children to day care at work and we engage in formal learning at work. We take our work with us on laptops when we travel, and we log in at home to continue the process. Similarly, we can find a blurring of the boundaries between these previously distinct areas of life.

Media Convergence

- Book publishing
- Broadcasting
- Worldwide Web
- CD-ROM development

Technology convergence

- Video
- Telecommunications
- Computing
- Internet

Pedagogical convergence

- Mediated/unmediated
- Synchronous/asynchronous
- Traditional/non-traditional students
- On campus/off campus

In this presentation, Video and Internet demonstrations will illustrate the concept of "Convergence" as it relates to lifelong continuing education and the new relationship between business and higher education. We will describe a program that provides continuing medical education on the Internet, and a course that creates a new hybrid, blending

- synchronous and asynchronous delivery
- Web and video (ISDN and Internet streaming) formats,
- executive and traditional education,
- and time and space-bound programs,

in an international partnership between four universities and ten corporations.

Both programs serve as a model for a new economic and educational relationship between universities and business throughout the world.

Walking the Talk: Convergence of Time, Space, Media, and Pedagogy

Continuing medical education (Grand Rounds). In 1998, Cornell partnered with Microsoft in a beta test of new video-streaming technology (MS Media Player) for the Grand Rounds series. That technology proved ideal for the needs of the 5,000 doctors who would participate. When the doctors watch Grand Rounds on the Internet, they see everything that their colleagues in the audience saw at the time of the presentation, exactly the way they saw it, sometimes even better. There are two windows on the computer screen: one shows the video of the presenter, while the other displays the graphical images that the doctor had projected during the presentation. The crisp, clear images on the computer screen change at the precise moment the presenter changed them during the talk.

Doctors can view the presentations on any computer with a connection to the Internet. The Grand Rounds videos can even be viewed from a laptop in a hotel room using standard phone lines and a 56Kbs modem. No special technology is required. Free software for viewing the programs can be downloaded from Cornell or Microsoft.

In their evaluation of the experiment, several doctors from participating hospitals reported that the Internet Grand Rounds were equal or superior to attending the program in person. The demands on a physician's time are such that there are almost always conflicting priorities. Now it is no longer necessary to choose between continuing medical education and patient care. Network doctors can tend to their patients and attend Grand Rounds at their convenience. The video streaming presentations give participating physicians some other advantages over live presentations. Now they can replay a Grand Rounds, review a particular slide or section, and even retrieve the archived presentation months later.

International human resources management. In this course, Cornell partnered with ten corporations and three other universities to create a new model that completely merges business education and higher education. Case studies are evaluated by combined groups of corporate executives and traditional graduate students in virtual teams that are created between participants of different cultures from different geographical locations.

Both ISDN and Internet streaming video are used extensively, while the majority of the course is conducted asynchronously on the Internet. The teams, whose members have never met in person, prepare their reports using a variety of web-based tools, such as threaded discussions, because of time zone differences. When each team reports, they are linked synchronously via a video bridge so that all four sites can see and interact with each other.

Of the 95 graduate Human Resource and business students enrolled, only 20 are on Cornell's campus. The rest are in Shanghai, Caracas and Ljubljana, a major city in Slovenia. About 25% of the students are human resource executives at General Motors and nine other supporting companies. The state-of-the-art amphitheater-shaped classroom where Prof. George Milkovich runs the course has three oversized screens that, in addition to displaying PowerPoint slides, show live, high-resolution views of the Chinese, Venezuelan and Slovenian students in their respective classrooms. Those students, in turn, have clear, real-time views of their Cornell classmates and each other as they discuss the same assignments and present reports together.

The classroom in Slovenia doesn't look much different from the classrooms in Venezuela or China. Each is outfitted with desks arranged in a pattern and each is filled with students and business executives. Together they solve such global HR problems as:

- how to give an honest job performance evaluation in a country where it's considered impolite to criticize, or
- how to hire employees who will fit into a company's culture when it's different from the host country's culture, or
- how to reward good job performance in a region beset by double-digit inflation.
- Or most important, whether globally organized enterprises outperform those organized only domestically.

Milkovich's counterparts overseas manage local class sessions. He chose the three participating universities because he had visited them and knew colleagues there. He insisted that all students and instructors meet face to face in real time for eight three-hour global sessions during the 16-week course. That entailed not only overcoming some technological hurdles but timing class meetings to fit an international clock. For the Cornell group it has meant rising early enough to be in class by 7 a.m. once every other week, while for the Shanghai group it has meant being in class from 8 to 11 p.m.

The class communicates via ISDN video-teleconferencing, with simultaneous Internet video-streaming providing two levels of real-time backup, and material on the web site supplementing the live sessions. The triple protection ensures the class will continue, even if technical difficulties arise.

The full group of universities and businesses include Shanghai Jiao Tong University in China; The University of Ljubljana in Slovenia; and the Universidad Metropolitana in Venezuela. In addition to General Motors and GM China, corporate partners in the course include: Petroleos de Venezuela, S.A. (PDVSA); Mobitel, in Slovenia; Delphi, a New York parts-making subsidiary of GM; Moviltel; Arthur Andersen; Telcel; Hay Group; Intesa; Shell; and UCAB.

Additional information is available at four web sites:

Online Continuing Medical Education
<http://www.news.cornell.edu/releases/Feb99/grandrounds.bs.html>

The Global HR Program <http://www.news.cornell.edu/Chronicles/3.11.99/HR_course.htm>

Jonathon D. Levy <http://www.ilr.cornell.edu/distlearn>

The Cornell University Office of Distance Learning <http://www.dl.cornell.edu/>

Copyright 1999 Jonathon D. Levy. Limited permission to reproduce this paper is available by contacting the author in writing. All presentation and duplication rights are reserved to the author.

Biographical Sketch

Jonathon D. (Jon) Levy is a lifelong advocate of technology for learning. His professional credentials include stints as a broadcast journalist, television director, newspaper editor, executive vice president of a chamber of commerce, teacher, entrepreneur, community leader, administration systems analyst, and for the past twenty years assistant dean and distance learning guru at Cornell University. The recipient of two top awards for visionary leadership from the United States Distance Learning Association, Jon has assisted corporations, foreign governments, and other Ivy League universities in the creation of non-traditional educational modalities. A philosopher and futurist who "walks the talk," Jon has pioneered the integration of technology into very traditional higher education programs and implemented automated classrooms for both real-time and on-demand distance learning.

Address: 620 Catherwood Tower
Cornell University
Ithaca NY 14853
E-mail: JL63@cornell.edu
URL: http://www.ilr.cornell.edu/distlearn
Phone: (607) 255-2055
Fax: (607) 255-6974

Motivation and Persistence in Distance Learning: Making the Most of Your DL Programs

Susan Lopez, Principal
L & C Associates

Corporate training strategies have traditionally relied on a classroom setting to formally train employees. However, teacher-led classes held regionally or at a corporate headquarters facility have become too expensive to meet all of today's training needs. In the search for alternative learning models, many organizations are embracing self-directed methods such as web-based training, distance learning, and other alternative delivery mechanisms as a solution. Research has shown that there are high dropout rates in these programs. Students dropout of DL programs for a variety of reasons, but often it is because they do not know how to learn independently. This paper examines the lack of persistence and reviews three distance learning solutions that may relate to this problem.

What Is Distance Learning?

Distance learning relates to any educational activity where the student and teacher are separated by space and perhaps by time. For example, a student could be in New York and the instructor could be in San Francisco. They may never communicate synchronously (in real-time), but they can communicate asynchronously through the use of chat rooms, e-mail, voicemail, and threaded discussion groups. This feature may explain the appeal of distance learning to adult students and their managers. The choice of time and place is based upon convenience of the students, and not the convenience of the training provider. There are four major components to distance learning. They are the separation of instructor and student during at least a majority of the instructional process, the influence of an educational organization or training provider, the use of educational media to unite instructor and student and to carry course content, and the provision of two-way communication between instructor and student, whether synchronous or asynchronous.

Distance Learning has been accepted in many corporate training environments as a means of reducing the high cost of training. Although corporations appear to be enamored with technology-based self-directed training programs, the media used to deliver the programs is largely irrelevant so long as a sound instructional method is implemented (Clark, 1983). Increasingly, corporate training departments are asking for programs and media that are self-paced and encapsulated so that the student can complete an entire training course without intervention from an instructor or other students.

Overview of Three Distance Learning Solution

Access to the Internet is becoming more readily available in the workplace. A concurrent phenomenon is the pervasiveness of online distance learning programs available at the employee's desktop. These programs offer a variety of delivery methodologies, but roughly fall into three categories: Web-based training (WBT), synchronous distance learning programs, and asynchronous distance learning programs.

Web-Based Training

Web-based training (WBT) is like a standalone CBT in that one product is deployed to many learners, but WBT uses the Internet or a corporate intranet for distribution. Students in this environment are completely on their own. These courses are self-paced and do not generally include any instructor mediation. WBTs rely on the course materials to provide the structure, content, motivation, and remediation for the students. These courses can be short (15-30 minutes in length) and can be used to address real-time performance problems, or they can be multi-hour courses that span several days to address employee development. Unfortunately, many companies are so anxious to get on the WBT bandwagon that they are simply converting teacher-led training materials on to the Web and calling it WBT. These documents are not a model for training programs and students would be better off using paper-based materials as it is easier to read than text on a monitor screen.

Synchronous Learning Environments

Synchronous distance learning environment is training at the same time but in a different place. This training can simulate a classroom that includes lessons, instructor-facilitated and small group discussions over the telephone, chat rooms, and slide annotation. Presenters can make interactive, multi-media presentations to large and small audiences using the browsers as the platform. Within the "classroom," students can contribute to the presentation, ask questions, vote, and have small group discussions. The solution usually consists of a console for the trainer/presenter and a different one for the students that displays within the browser. The audience console may have a slide display area for viewing (and annotating slides), audience question area to input questions directly to the presenter, audience seating map to facilitate small group discussion, and audience response, a mechanism to provide quick feedback using a traffic light metaphor (red, yellow, green lights). The presenter console has the same tools available to the audience plus a question manager to keep track of incoming questions and a presentation builder to assist in building the slide presentations.

At its best, this type of a learning environment is more like a traditional course than it is like a CBT. At its worst, this type of learning can become the ultimate "page- turner." In this environment, students are part of a larger group and can rely on an instructor to set pacing requirements and to answer questions regarding content learning strategy. Although students are not face to face with their peers and the instructor, synchronous communication is possible and may be encouraged. These courses also have attributes that are distinctly different from a traditional teacher-led course. Because students are separated geographically from the instructor, students can mentally "dropout" and no one will be able to see a blank look or any inattention to the course. Instructors must be vigilant to levels of interaction and participation to ensure that students are engaged in the materials and the course if lack of persistence is a problem.

Asynchronous Learning Environments

Asynchronous distance learning environments allow students to work at their own pace and can be considered training in a different place and at a different time. Even so, it can also enable students to work in small groups, so long as they agree to communicate by a particular time. This solution usually includes a consistent training infrastructure, while the curriculum for each course varies. This solution offers specialized interactive database modules that can be accessed using the Web. A major benefit to this type of distance learning is that it can encourage a collaborative learning environment-even though students may never meet face-to-face. The following database consideration may allow users to engage in problem-solving activities, debates, discussions, and exercises.

- A module for participants to navigate through course materials and exercises, take tests, and participate in surveys as well as the instructional design and structure for the course;
- The course content module: audio, video, presentations including text-based information, as well as access to external sources such as the World Wide Web and other content repositories. This module will vary with each class.
- The "classroom"—an interactive environment in which students have discussions among themselves and with the instructor, as well as collaborate on team tasks and assignments.
- A community area where student and instructor descriptions reside. This area may include contact information, photographs, or information about education, experience, and interests. The purpose of this area to enable students and instructors to get to know one another.
- An evaluation module that is accessible by the instructor only and is a mechanism for instructors to privately test and give feedback on participant performance.

This solution takes advantage of the flexible nature of asynchronous learning environments, that is students can participate whenever and wherever it is most convenient for them. This solution also relies on the student to have the necessary motivation and self-regulatory skills to complete the course. To ameliorate a lack of self-regulation strategies for pacing, a scheduling module can define explicit pacing instructions, and instructors can mandate online status meetings. In addition, the infrastructure can enables peer to peer collaborations, as well as mentor relationships. However without careful monitoring by instructors or facilitators, this solution can also enable students to mentally dropout without anyone noticing them.

Motivation and Persistence

Distance-learning schemes seem to rely more on technology and less on research in learning and motivation models. This section examines a cognitive motivation model that may enhance the learning experience for students in DL programs. Pintrich and Schunk (1996, p.21) define motivation as "The process whereby goal directed activity is instigated and sustained." Why do students drop out of distance learning programs? There may be many reasons that are related to individual differences, motivation, or the environment. Clark (1997) describes how these reasons relate in using the Commitment and Necessary Effort (CANE) Model. The CANE model describes commitment and persistence to a goal in terms of self-agency (will I be allowed to do it?), value (is it important, interesting or useful?) mood (do I feel like it?) and self-efficacy (am I able to do it?). The following section relates the CANE model to environment and individual barriers that should be considered when designing DL programs.

Environmental Barriers: I'd like to finish that class but . . .

Organizations often inadvertently prevent students from fully participating in and completing DL programs. In the CANE Model, the goal choice begins with personal agency beliefs. The individual assesses his perceived ability to complete the task by asking himself, "Can I do this? Will I be permitted?" This judgment is not necessarily based on the individual's current knowledge and experience with the task but merely with the individual's perception of his ability to succeed in the task. If the answer to the question, "Can I do this?" is no, the learner will exit the system. Most individuals will not choose a goal if they expect to fail (Bandura, 1986; Pintrich & Schunk, 1996). Organizations may interfere with a student's ability to complete a DL program in the same ways that they do with traditional classes. One of the most obvious ways to prevent students from completing a course is to not give them the opportunity to complete the DL courses due to interruptions at their place of study or through an increased workload. Because students are not necessarily in a classroom, they are "fair game" for interruptions. Most managers will think twice before interrupting a student in a classroom, but will cheerfully interrupt a student in his cubicle or office. Other more subtle ways the environment can impact DL course completing includes inadequate resources such as hardware; software; or no Internet access, permissions, or logon accounts. Other environmental barriers include inadequate incentives for completing a course; course content conflicts with the status quo; conflicting objectives, i.e., students must take 40 hours of DL training and must also complete 100 customer service calls per day; and students are required to take classes they do not need for their job. These environmental barriers can be ameliorated by performing a thorough needs assessment prior to designing training programs and by continually assessing the DL program as students complete courses. However, when designing and assessing any program, it is important to remember students will not persist if they believe the environment will inhibit them from succeeding in the course.

Individual Barriers: I don't know if I'll finish— it's not what I expected

Students often find that the effort required to reach successful task completion of a DL program is more than they imagined. However, motivation to persist is enhanced when students perceive they are making progress towards their expected learning outcomes.

The CANE model describes this process as an assessment of self-efficacy (am I able to do it?). Self-efficacy determines the necessary cognitive effort required to achieve the goal. A lack of persistence may be symptomatic of low of self-efficacy related to a lack of success in a self-directed environment. Metacognitive strategies enable learners to maximize performance by making adjustments or "fine-tune" his own learning strategies of planning, evaluating, and regulating performance to set and reach goals. These strategies help the learner to make choices relating to the tasks in which to engage, and make decisions regarding whether (and when) to solicit help (Henderson, 1986; Schunk, 1996; Zimmerman, 1989). If students lack adequate learning strategies, they will most likely *not* succeed in a DL environment. In this situation, the student may make mistakes due to an insufficient use of, or lack of, appropriate control processes, but he may attribute his lack of success to other factors such as disinterest, not enough time to devote to class, a bad course, or other external reasons. Unfortunately in our society it is often the case that individuals would rather be thought stubborn than stupid (Covington, 1993; Jagacinski & Nicholls, 1990; Pintrich & DeGroot, 1993).

Distance learning programs frequently include recommendations for pacing, timing, and learning strategies, but it is up to the student to actually use these suggestions. No human will recognize that a student looks puzzled and there are no peers with whom to consult. Students in these courses have a great deal of control over processes for planning, monitoring, and connecting of their learning, as well as course pacing, and depth of study. Students control and manage their efforts on assigned tasks and may use their own cognitive strategies (rehearsal, elaboration, etc.) to learn and understand material. These same strategies apply to traditional teacher-led classes as well as for distance learning courses; however, distance learning takes place regardless of proximity to an instructor or other students. As many students (and managers) are discovering, learning on one's own requires a discipline that may be different than learning in a classroom. Because the student may not have access to a "live" instructor in a DL program, it is imperative that self-regulation strategies are available to the students who need them.

Conclusion

Technology has enabled corporate training organizations to implement a variety of DL solutions including those that are Web-based, synchronous and asynchronous. This technology has been purported to be less expensive to deliver than traditional training, and its presence is becoming more prevalent. Each model can assist learners to become more knowledgeable and productive, yet each model has its limitations. By utilizing standard instructional design practices, training departments can design programs that utilize media most effectively and efficiently to take advantage of the benefits of technology. In addition, successful DL programs take into account environmental and individual barriers that can impact student motivation and persistence. By designing DL programs with a goal of incorporating the latest in computer technology with the latest in learning and motivation research, corporations will be able to truly take advantage of the Internet.

References

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice Hall.

Clark, R. E. (1983). Reconsidering research on learning from media. *Review of Educational Research, 53*(4), 445-459.

Clark, R. E., (1997, November). *The CANE model of motivation to lean and work: A two-stage process of goal commitment and effort.* Paper presented at the University of Leuven, Belgium.

Covington, M. V. (1993). *Making the grade: A self-worth perspective on motivation and school reform.* NY: Cambridge University Press.

Henderson, R. W. (1986). Self-regulated learning: Implications for the design of instructional media. *Contemporary Educational Psychology, 11*, 405-427.

Jagacinski, C., & Nicholls, J. G. (1990). Reducing effort to protect perceived ability: "They'd do it but I wouldn't." *Journal of Educational Psychology, 82*, 15-21.

Pintrich, P. R., & De Groot, E. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychologist, 82*, 33-40.

Pintrich, P. R., & Schunk, D. H. (1996) *Motivation in education: Theory, research and applications.* Englewood Cliffs, NJ: Prentice-Hall.

Schunk, D. H. (1996, April). *Attributions and the development of self-regulatory competence.* Paper presented at the annual meeting of the American Psychological Association. (ERIC Document Reproduction Service No. ED 391 662)

Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology, 81*(3), 329-339.

Biographical Sketch

Susan Lopez is an independent consultant specializing in the application of human performance technology in high-technology companies. Susan also provides training services for the design and development of training for classroom and Web-based delivery. Prior to her work as a consultant, Susan worked as a training manager for telecommunications and semiconductor companies. Susan was also the world wide program manager for Internet-based training at Hewlett-Packard Company. Susan is an active member of the International Society for Performance and Instruction (ISPI) and the American Society for Training and Development (ASTD). She received her B.S. degree in organizational behavior from the University of San Francisco and her M.A. degree in instructional technology from San Jose State University. Susan is currently a doctoral candidate in the School of Education at the University of Southern California.

Address: L & C Associates
111 Via Teresa
Los Gatos, CA 95030
E-mail: sylopez@gte.net
Phone: (408) 395-3631
Fax: (408) 395-5632

The University of Wisconsin Distributed Learning System

Ed Meachen
Associate Vice President
University of Wisconsin System

Hal Schlais
Coordinator for Learning Technology Development
University of Wisconsin System

Introduction

The University of Wisconsin *distributed learning system* (DLS) is a comprehensive set of services designed to provide a wide range of Web-based instructional resources to the 26 campuses of the University of Wisconsin System (UWS) and its 175,000 students, faculty and administration. The DLS is an array of services available to higher-ed and K-12 institutions consisting of a web-infrastructure, support for hosting of several popular web-based courseware learning tools, necessary technical support, and necessary faculty/staff professional and course development opportunities. Core elements of the DLS have been aggregated at UW System institutions and are being delivered to the UWS, K-12 and private institutions of higher education as a "utility". We will outline the evolution of this "utility," discuss its role in the delivery of technology enhanced instruction across the State, discuss its various components and the service array provided, examine curricular support issues addressed, and discuss the policy issues and related strategies for funding the system we have come to call an "academic system".

The Early Discussion - 1995

The DLS has been evolving since the time UWS Administration Office of Learning & Information Technology began discussing "distributed learning systems" with campus technology leaders in the 1994-95 academic year. The concept outlined in the *1995 UW System Strategic Plan for Information Technology* was that a distributed learning system would provide appropriate infrastructure to allow users to interact at any time and in any place an "integrated personal access station" was located. The concept was piloted with an initial pilot implementation in 1995 involving two UW institutions.

State and Regent Actions

Concurrent with the above discussion, two separate strategic planning processes were being undertaken that affected the evolution of the DLS. The UW Board of Regents began a discussion of the role of the University of Wisconsin System for the next decade, and the State of Wisconsin used the opportunity of renegotiating Statewide telecommunications contracts to design a new high-speed, communications network. In June of 1996, the Regents published *A study of the UW System in the 21st Century*. In the summer of 1997 the telecommunications contract negotiations resulted in the establishment of a SONET ring as the Statewide telecommunications backbone.

The UW DLS became possible with the subsequent implementation of a wide area ATM network on this backbone, extensive wiring on all UW campuses, and the growth of the Internet.

Implementation of the DLS

While the early conception of the DLS and policy decisions related to it laid the framework for the creation and implementation of the technological infrastructure necessary to support the DLS, it became clear early on that effective utilization depended on faculty and student acceptance and use. A distributed system allows teachers and students to interact virtually anywhere the network extends—and the place where the work gets done is independent of where these users are. This means that the distributed learning system demands a distributed support system as well as a distributed delivery system. The support system, like the learning tools it supports, can be located anywhere, but requires a specific set of services that must be timely, reliable, easy to access, and flexible so that when the technology changes, so may the services. The services provided must therefore have a focus on support and flexibility. Appropriate technological support must insure seamless user access to a variety of Web-based learning that can be expected to evolve as need dictates; and robust faculty and staff development strategies must provide support for course and professional development, to enable effective use of the environment.

Web-Based Learning Tools in the UW System

At the heart of the DLS, is the emergence of sophisticated Web-based learning tools (WBLT) that allow for instructional materials to be organized and interaction to occur through the use of Web-accessible software that functions in an electronic classroom metaphor. The use of these tools has grown substantially. While it is difficult to get exact numbers, in the 1998 *UW System Survey of Computing Resource* we found that about 100,000 students and over 50% of the teaching faculty and staff use the Web in a significant fashion for instructionally related activities. It is clear that although the delivery of asynchronous courses online is a consideration for the DLS, by far the majority of an increasing number of faculty are using WBLTs to enhance on-class instruction. The above not withstanding, programmatic considerations are beginning to emerge at an ever-increasing pace in the UWS. Several campuses are moving to program delivery using totally asynchronous course delivery.

The Utility Concept

The question is then to find a reasonable strategy for supporting these tools in the UW System environment. Clearly there is a tension between a wide collection of choices and standardization, as well as between standardization and maintaining a research and development posture. In this early stage of teaching/learning system market development we think that it is impossible to pick a likely "winner" and it seems unwise to bet a substantial amount of institutional resource for the long haul. During the summer of 1998, the UW Council of CIO's agreed that a UW System internal RFP should be issued to describe the service level required and to aggregate those services to support three of the most commonly used WBLT's at UW Institutions (www.uwsa.edu/olit/). These were Web Course in a Box®, Lotus LearningSpace®, and WebCT®. The philosophy was that with the aggregation of services would come efficiencies and economies of scale, improved services, and the development of a pricing model. Moreover, the UW Institutions could "buy" their services from the appropriate UW vendor. Additionally, a pilot project was conducted to explore the hosting of LearningSpace® at a private vendor external to the UW System.

Faculty and Program Developmental Support Structures

The availability of the DLS is changing significantly how the UW approaches the delivery of materials and programs. It has created a number of new instructional models and collaborations in the UW System. At least three fundamentally different models for Statewide collaborations have emerged. They are resource sharing among faculty and institutions, student communication across the System on common courses, and program and course delivery. A project called BioWeb (http://www.uwlax.edu/BioWeb/) focuses on the development of shareable resources for about 40 UW Biologists across the State. The Student History Network has some 1500 students and about 40 instructors across the State engaged students in online dialogue centered on introductory history courses (http://www.history.uwec.edu/). The DLS is enabling complete online delivery of two extended degree programs, a criminal justice program, a nursing degree completion program involving five UW institutions, a masters degree in Engineering Professional Practice, online courses supporting completion of an associate of arts degree, and a global collaboration to deliver part of a Hospitality and Tourism masters degree.

In order to effectively utilize a system which incorporates such a wide range of statewide collaborations and program delivery mechanisms, a parallel structure of support groups and development resources are required. These come in the form of support personnel, physical spaces and program development organizations.

Program Development With an Out-of-State Focus

As part of *the Study for the 21st Century*, the Board of Regents mandated that "a non-stock, non-profit organization will be created to support technology-based education". As a result of that directive the UW Learning Innovations unit has been formed (http://learn.wisconsin.edu/). This entity provides support for the development of institutional programs that have a focus on marketing external to the State.

Faculty and Program Development with a UW System Focus

The faculty and program development and sharing within the System is focused on a number of groups and facilities. In the 97-99 State biennial budget, the UWS received $2.3 million in ongoing funding for "Curricular Redesign." 75% of this is distributed to the UW institutions on an FTE basis for use deemed appropriate by the campuses. Institutions have used this funding to staff and outfit learning technology centers and to establish grant programs for the development of technologically related instructional materials. At the System level, the UW Learning Technology Development Council (LTDC) has been developed over the past two years as a collaborative group of institutional representatives whose mission is to share, enhance and find means to support the necessary faculty and program development to utilize the DLS. This group administers about a $450,000 annual grant program also a result of the biennial funding (www.uwsa.edu/oloit/ltdc/).

Among the most important additions to the System strategy for effective utilization of these new technologies is the recent opening of the Pyle Center. This facility of the University of Wisconsin Extension is located on the UW Madison campus and provides the very latest in technological and communication tools. As well, it provides an important resource for faculty development, enables course development and delivery, serves as a research and development center, and acts as the Statewide communication nexus providing connectivity bridging for a number of technologies including compressed video and other telecommunications.

Academic Systems

In the past individual campuses dealt with internal technology needs as they arose, whether they included administrative systems, network, library or faculty support. More recently, we in the UW System have moved to a number of large, expensive, administrative systems (human resources, financials, student records, and library automation). Currently academic support software, coupled with network and desktop connectivity and the advent of the World Wide Web, have changed the equation just as drastically for the support of the instructional technology. Just as with the administrative systems, the pieces are too diverse, support requires a different set of skills, and new applications are emerging very rapidly. Individual campuses simply cannot keep up with the changes in teaching and learning systems. To support the orderly and efficient development of distributed educational resources requires conceptualization and funding of these services within the UW System in a manner similar to that in which we view and fund higher education administrative systems, i.e., the *academic system*. Like administrative systems, academic systems require specially trained staff to support the infrastructure as well as the application. And like administrative systems, academic systems such as the DLS require Statewide strategies for funding and support.

The Common Systems Working Group

In order to ensure that appropriate information technology systems (both administrative and academic) that are achieving a system-level mission critical status are properly identified and appropriately funded, the UW system recently created a group of campus and System representatives called the Common Systems Working Group. A process has been devised to forward prospective academic and administrative systems to the group. Their charge is to sort among them and make recommendations regarding appropriateness and funding levels. The Common Systems Group recommended (among other things) that we begin support of the DLS by underwriting Web-based learning tools hosting sites.

The Common Systems Working Group has recommended that we begin support of the DLS by underwriting Web-based learning tools hosting sites. The working group agreed that central funding of one million dollars in FY 99-00 go to support three products: Lotus Learning Space, Web Course in a Box, and Web CT. Each "utility" would receive about a third of the funding to provide software, server, and training support for faculty and teaching academic staff who wish to use these tools at any UW institution. Other facets of the distributed learning support services may be considered for central funding by the Common Systems Working Group in the future. At least three "utility" sites have been or will be chosen to support the previously mentioned Web-based tools.

Transitional Funding Plan

For the next two years, individual universities and colleges will continue to invest money in various portions of technology support, but System Administration will make a strategic investment in new initiatives related to the DLS, making them available at no additional cost to the institutions. We will measure use of these centrally funded resources over the first two years. Use metrics will need to be determined and agreed upon by all campuses. By the time we reach mid-year in year 2 (2000-2001), we will re-examine the central funding model to determine if we should continue central funding or build the costs into individual institution's base budgets.

External Resources

Potential additional sources of funding for the DLS exist now in other educational entities. For example, public schools currently buy modest DLS services from UW-Eau Claire, and colleges and universities external to the UW have expressed interest in purchasing hosting and professional development services for Web-based courses for their campuses. There is a prospect that regional higher education consortia may look to the Wisconsin DLS model to provide some support services for their own distributed learning system initiatives.

Conclusion

We have entered an environment where support of large academic systems such as the DLS is too costly for even the largest, best-funded universities. The problem created by the DLS model is at least two-fold: 1) how do we best support and nurture the current while encouraging the development of still unforeseen and soon to be emerging technologies and 2) how do we predict their costs, and pay for them. Teaching and learning systems have now become legitimate policy concerns that supercede the uneven vagaries of the market economy.

With this in mind, our goal is 1) to provide all UW campuses with the opportunity to use distributed learning system technologies to enhance teaching and learning, 2) to guarantee a teaching/learning system infrastructure (including software, hardware, and staffing) that will enable on-campus or off-campus network-based courseware, and 3) to provide a longer term funding model which will ensure core DLS services to all UW Faculty and teaching staff and provide support for the emergence of those newly identified services which address our core mission.

The basic intent is to have central monies to draw upon for investment in emerging teaching and learning technologies, and to have a clear delineation for the redistribution of costs back to the base budgets of campuses. The redistribution would be at the campus level, not the individual faculty, department, or even school level, because we believe teaching and learning systems implementation are strategic decisions which must be based upon each institution's mission and goals. By assessing each institution's use of the distributed learning and services system, and then assigning a proportionate portion of the total cost to that institution for the upcoming year, we believe the decision process is moved to the appropriate decision makers on the campus.

References

The University of Wisconsin Board of Regents. (1996). *A Ssudy of the UW System in the 21st century.*

The University of Wisconsin Office of Learning and Information Technology. (1995). *UW System strategic plan for information technology.*

The University of Wisconsin Office of Learning and Information Technology. (1998). *UW System survey of computing resource.*

Biographical Sketches

Ed Meachen is Associate Vice President for the Office of Learning and Information Technology, a position he has held for the past two years. His responsibilities include, among other things, technology planning, System-wide technology support, and leadership of the 15-member University of Wisconsin CIO Council. He served from 1992 to 1997 as the Associate Vice Chancellor for Information Services and from 1990 to 1992 as Library Director at UW-Parkside. He holds a Ph.D. in history from Emory University and an MLS from the University of Chicago.

Address: Associate Vice President for Information Technology
University of Wisconsin System Administration
1552 Van Hise Hall, 1220 Linden Drive
Madison, WI 53706
E-mail: emeachen@ccmail.uwsa.edu
Phone: (608) 265-3095
Fax: (608) 265-3175

Hal Schlais has been working with the development of learning technology in the UW System for the past five years and is currently the Coordinator for Learning Technology Development for the System. His responsibilities include development of strategies, resources, infrastructure and programs that support technologically related faculty development and curricular redesign. He coordinates the UW System-wide Learning Technology Development Council. He holds a Ph.D. in mathematics from Arizona State University and served as Professor of Mathematics for 22 years in the UW Colleges.

Address: Coordinator for Learning Technology Development
University of Wisconsin System Administration
1652 Van Hise Hall, 1220 Linden Drive
Madison, WI 53706

E-mail: schlais@facstaff.wisc.edu
Phone: (608) 265-5362
Fax: (608) 265-3175

Web-Based Distance Learning for University Level Instruction in Horticulture With Emphasis on Psycomotor Skill Development

Kenneth W. Mudge, Associate Professor of Horticulture
Department of Floriculture and Ornamental Horticulture
Cornell University

David G. Way, Director of Instructional Support
Center for Learning and Teaching
Cornell University

Introduction

Across a wide range of academic disciplines, computer-based asynchronous distance learning is emerging as an effective alternative or supplement to campus-based courses requiring mastery of concepts and cognitive skills. It is less clear, however, that asynchronous technologies including the World Wide Web, CD, and email are appropriate for learning the psychomotor skills that are vital to achieving competence in many disciplines in the Arts and Sciences. Neuro surgery is often described facetiously, as a skill that students of medicine ought not to acquire asynchronously. Regardless of discipline, there are relatively few examples in the literature of distance learning of asynchronous computer-based approaches to teaching hands-on skills. Crider and Garman (1998) taught a university level Web-based physical education course in fitness activity, in which students at a distance used their local health club to successfully achieve course-directed improvement in physical fitness. National Science Foundation funded Hands-on Physics kits consisting of tools and parts were used remotely by students in a course on Technical Physics to learn to construct (including soldering) solid-state electronic devices which they used to collect measurements and derive inferences about physical phenomena (Abbott, 1998).

In the agricultural sciences, including horticulture, there are many skills that require the use of tools, or one's own hands to manipulate plants, animals, or the environments in which they dwell. Successful implementation of distance education in the horticultural sciences will depend not only on development of synchronous and asynchronous strategies for learning the conceptual and descriptive aspects of this field, but also for learning the hands-on practical skills involved. As a starting point, our objective has been to design and implement Web-based instructional materials for teaching the science and art of modern plant propagation, which is the sub-discipline of modern horticulture that brings us more and better food and ornamental crops. For example, the apparent conundrum of how to propagate a seedless grape is answered by teaching students about the principles and practices of grafting part of one plant (the seedless grape variety) onto the root system of another plant (another grape variety). We have recently developed and offered a one credit Web/CD hybrid-based course in horticulture called the *How, When, and Why of Grafting* (http://instruct1.cit.cornell.edu/courses/hort494/graftage/). As the title suggests, the course teaches students not only concepts of plant anatomy and physiology involved in establishing a functionally successful, intimate graft union between different parts of two separate plants, but also how to use an extremely sharp knife to achieve the exacting carpentry involved in bringing about such a union. A limited analogy to distance learning of brain surgery is perhaps appropriate, although the consequences of failure to learn are not so grave.

Course Structure and Grading

As a prelude to eventually achieving our goal of teaching this course remotely to non traditional students outside the university campus, we offered a pilot version to resident students in order to closely monitor their progress, especially with respect to the laboratory or hands-on aspects of the course. Twelve students took this pilot version of the course during the spring semester, 1999. Instruction was entirely asynchronous, involving a Web site subdivided into "lectures" (conceptual and descriptive content), a discussion section, and three laboratory exercises. Eight separate lecture topics were presented using text, images, and links to relevant external Web sites from horticulture nursery businesses, academic departments, and government agriculture-related agencies and programs. Students were required to participate in a Web-based threaded discussion board and encouraged them to seek out and discuss information gathered from lectures, external Web sites, and their own prior agricultural experiences and current experiences in the lab exercises. The discussion board allowed the instructor to insert hyperlinks to images and external Web sites in response to student questions. The auto-tutorial laboratory exercises consisted of Web-based text, still images, and video clips from a course CD, hyper-linked to the lab Web pages. After studying the lab-related Web/CD resources, students conducted their own hands-on grafting laboratory exercises, at times of their own choosing, in a campus greenhouse where they had access to plants, grafting knives and other supplies. They were required to complete specific lab grafting "assignments" which involved performing three separate grafting methods. They were also encouraged to experiment with other methods not specifically assigned, by applying general principles learned in "lecture" section of the course. Students were encouraged to ask questions arising from their laboratory activities via the discussion board.

Fifty percent of a student's final grade was based on four quizzes covered information from lectures, labs, discussion board, and there were directed questions which required them to search for information from unspecified external Web sites. Twenty-five percent of the final grade was based on participation in the discussion board, and the remaining twenty-five percent for "demonstration of grafting proficiency" from the laboratory exercises.

At the mid point and again at the end of the 6 week course, students were asked to fill out a customized course evaluation form. They were asked to react both to course presentation technology issues as well as course content and learning outcomes.

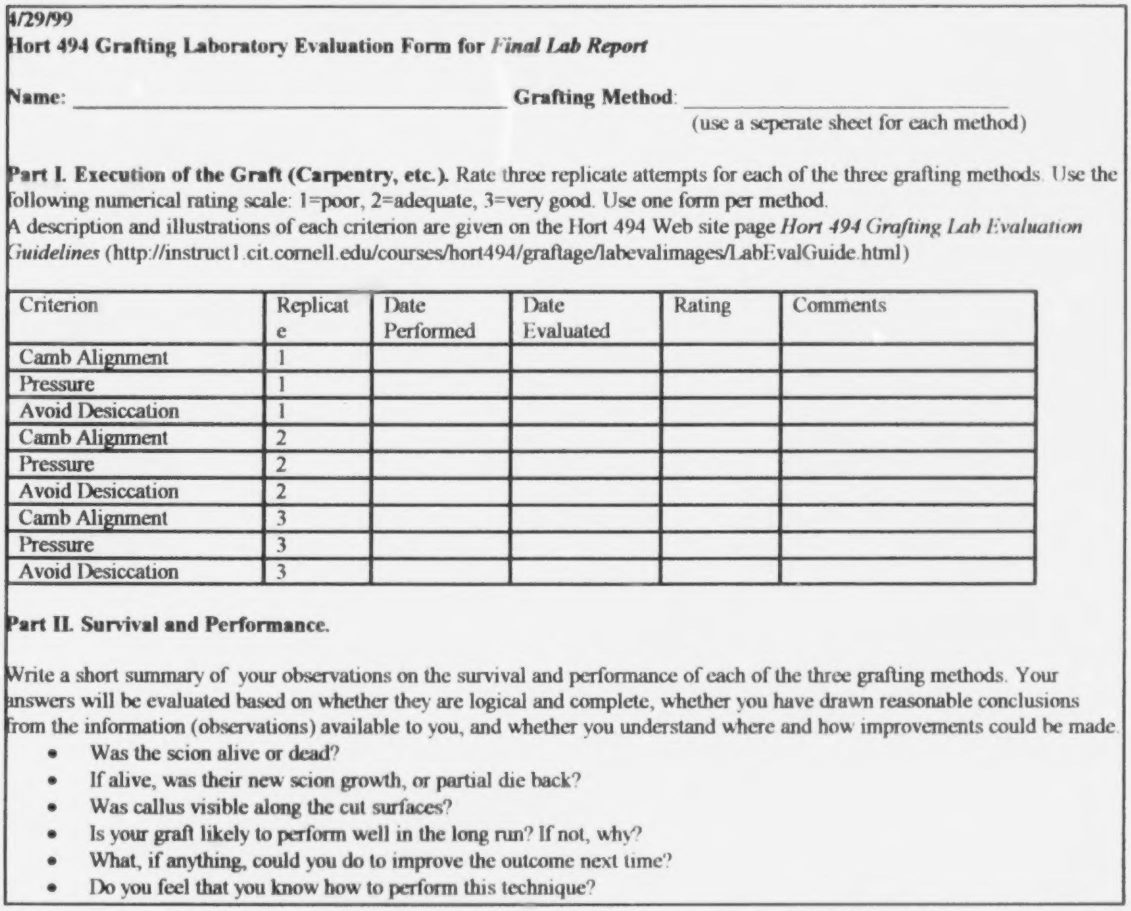
Evaluation of Hands-On Learning

One of the greatest challenges in this distance learning course was how to assess or evaluate "grafting proficiency" acquired by students, in the absence of direct observation of student grafting by the instructor. In a broader context, evaluation presents a serious challenge to the integrity and wide spread acceptance of distance learning as a legitimate tool for teaching hands-on skills. As part of this pilot course, we attempted to test the hypothesis *that learning could be accurately assessed by student self-evaluation rather than direct instructor observation* of student grafting or of their grafted plants. A critical element in this approach was careful attention to teaching students the criteria for successful grafting.

Methodology

Our method for testing this self-evaluation hypothesis involved comparing students' self-evaluation with the instructor's evaluation, and determining the correlation between the two. Student self-evaluation consisted of two parts: a numerical rating, and a written self assessment narrative. Four weeks after performing their grafting exercises students used a standardized form (Table 1) to numerically rate their grafted plants based on three specific criteria for success which involved structural (carpentry) and physiological (survival and growth) features. Their written narrative was based on several instructor-directed questions about plant survival and performance, the nature of any mistakes they made, and their level of confidence in their mastery of each of the methods.

Table 1. Student/Instructor Grafting Lab Self-Evaluation Form



4/29/99
Hort 494 Grafting Laboratory Evaluation Form for *Final Lab Report*

Name: ______________________________ **Grafting Method**: ______________________
(use a seperate sheet for each method)

Part I. Execution of the Graft (Carpentry, etc.). Rate three replicate attempts for each of the three grafting methods. Use the following numerical rating scale: 1=poor, 2=adequate, 3=very good. Use one form per method.
A description and illustrations of each criterion are given on the Hort 494 Web site page *Hort 494 Grafting Lab Evaluation Guidelines* (http://instruct1.cit.cornell.edu/courses/hort494/graftage/labevalimages/LabEvalGuide.html)

Criterion	Replicate	Date Performed	Date Evaluated	Rating	Comments
Camb Alignment	1				
Pressure	1				
Avoid Desiccation	1				
Camb Alignment	2				
Pressure	2				
Avoid Desiccation	2				
Camb Alignment	3				
Pressure	3				
Avoid Desiccation	3				

Part II. Survival and Performance.

Write a short summary of your observations on the survival and performance of each of the three grafting methods. Your answers will be evaluated based on whether they are logical and complete, whether you have drawn reasonable conclusions from the information (observations) available to you, and whether you understand where and how improvements could be made.

- Was the scion alive or dead?
- If alive, was their new scion growth, or partial die back?
- Was callus visible along the cut surfaces?
- Is your graft likely to perform well in the long run? If not, why?
- What, if anything, could you do to improve the outcome next time?
- Do you feel that you know how to perform this technique?

BEST COPY AVAILABLE

Instructor evaluation of the same grafted plants which students self-evaluated was performed at about the same time using the same criteria and numerical rating system.

Results

The course was well received by students overall. All eleven students (of the 12 students enrolled) who responded to the final course evaluation (of the 12 students enrolled), indicated that their own learning objectives and those of the instructor as stated on the Web site were met (Table 2). Students were well satisfied with the quality of instruction (rating = 4.4 on a 5 point scale), and felt positively about the value of the course compared to all other college courses they had taken (rating = 3.8). Fifty five percent of respondents indicated that they had some difficulty reading large amounts of text from a computer monitor. Regarding the hands-on laboratory component of the course, students were well pleased. The average rating given to the laboratory section of the course was of 4.7. Forty- five percent of respondents indicated that the labs were what they liked best about the course.

Table 2. Student Final Course Evaluation. Data are either the average rating on a 5-point maximum scale or percentage of students responding positively.

Question	Mean rating or %	Student written comments
Have the course objectives been met?	100%	
…value of this course in relation to other courses you have taken…?	3.8	
…how would you rate the quality of instruction of this course?	4.4	
After taking this course, are you more or less inclined to take distance learning courses in the future?	55% more inclined	• "hard time sitting in front of monitor" • "more stressful to figure out stuff on a computer than a book" • "hard to learn totally from screen"
What did you like best about the course?	45% hands-on labs	
Rate the labs overall	4.7	

The results of our comparison of students' self-evaluations with the numerical rating given by the instructor suggest that student self-evaluation is a reliable indicator of learning. This conclusion is based on the relatively high correlation coefficient (r2=0.7 to 0.8) for the regressions of the student self evaluation rating against the instructor assigned rating. From comparison of the data points on the regression plots for each method with the "ideal" result (the dashed line in Figure 1, passing through the origin with a slope = 1), it is clear that most divergence between student self evaluation and instructor evaluation was due to students rating their grafted plants lower that the instructor rated the same plants. The slightly lower correlation coefficient (r^2=0.65) for the Chip 1

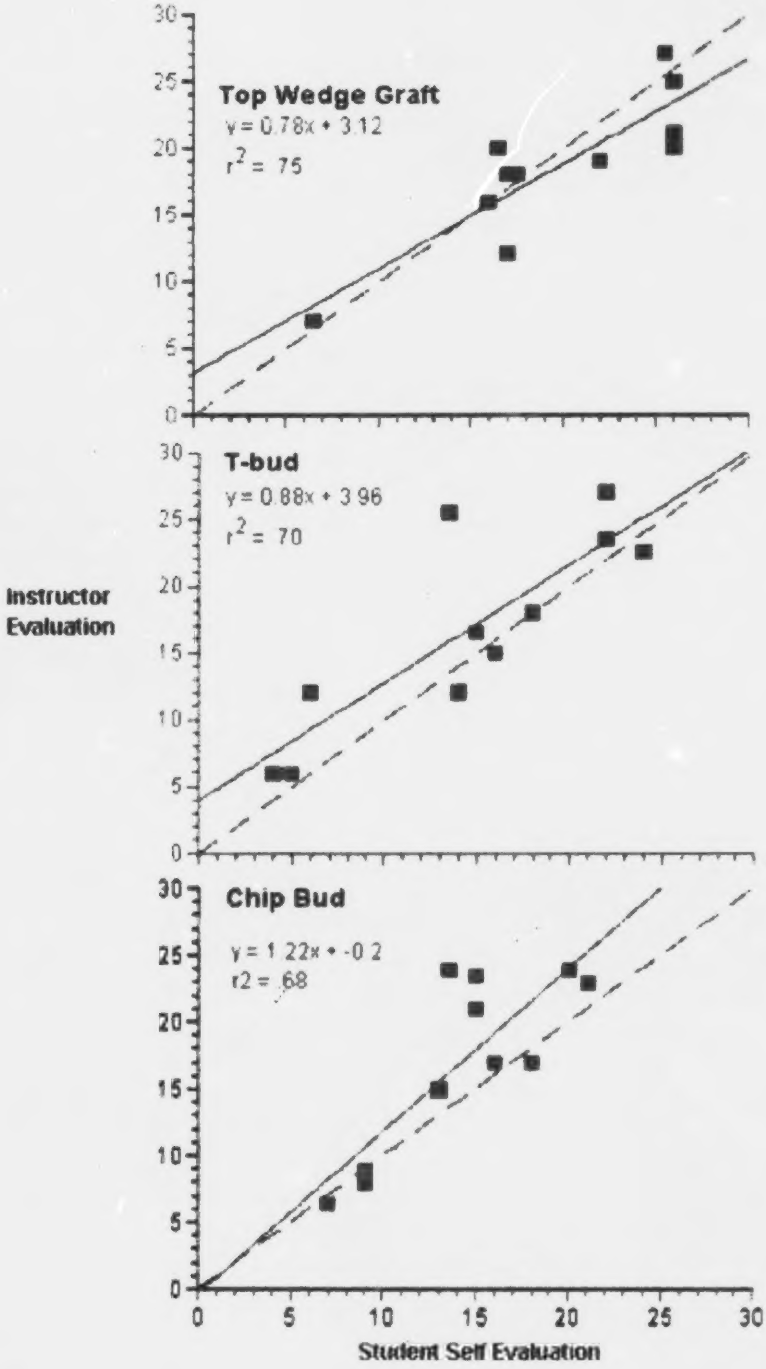


Figure 1. Relationship between Student Self-Evaluation and Instructor Evaluation for 3 grafting methods. Solid line is bet fit linear regression. Dashed line is "ideal" 1:1 correlation.

budding method suggests that the criteria for successfully performing this technique need to be addressed more explicitly or more carefully on the lab preparation Web page in the future.

Overall this experience in teaching a Web-based distance learning course in the manual skill-intensive subject of grafting was quite encouraging. Our experience suggests that distance learning can be an effective means of teaching horticultural science. These results further suggest that hands-on skills in a wide variety of disciplines can be taught effectively via Web based distance learning.

References

Abbott, H. (1998). Action@Distance: Using Web and take-home labs. *The Physics Teacher, 36,* 399-402.

Crider, D. A. & Garman, J. F. (1998). Personal fitness through distance learning: The first time around. In *What everyone needs to know before offering personal fitness as a distance learning course*. Presented at the American Alliance of Health, Physical Education, Recreation and Dance, Eastern District Association conference, Baltimore, MD.

Biographical Sketches

Ken Mudge is an Associate Professor of in the College of Agriculture and Life Sciences at Cornell University. He teaches courses in Plant Propagation and Agroforestry and has been involved in integration of electronic technologies into the traditional classroom. He serves as the Chair of the Faculty Distance Learning Committee. His research interests include propagation of tropical woody plants, domestic agroforestry and micropropagation.

Address: Department of Floriculture and Ornamental Horticulture
13 Plant Science Building
Cornell University
Ithaca, NY 14851

David Way is the Director of Instructional Support at the Center for Learning and Teaching at Cornell University. He has worked with Teaching Assistants and Faculty in their efforts to improve their teaching and course design since 1980.

Address: Center for Learning and Teaching
420D Computer & Communications Center
Cornell University
Ithaca, NY 1485

Exploring Primary Factors Hindering the Development of Distance Learning in the Higher Education Market

Yuko Mulugetta, Ph.D.
Director of Research and Planning Analysis for Admissions and Financial Aid
Cornell University
Ithaca, NY

Abraham Mulugetta, Ph.D.
Professor of Finance and International Business, and Director of the Center for Trading and Analysis of Financial Instruments
School of Business at Ithaca College
Ithaca, NY

Introduction

In 1995, the National Center for Education Statistics (NCES) conducted the first national survey on distance education courses offered by higher education institutions. One of the most intriguing findings was that in contrast to the private sector, a much higher percentage of public institutions offered distance learning courses: 58 percent of public 2-year and 62 percent of public 4-year institutions, in comparison with 2 percent of private 2-year and 12 percent of private 4-year institutions (NCES, 1997). Why does such a large discrepancy exist in the development of distance learning across public and private institutions? An attempt to answer this simple question is indeed driving this project forward. We may simply attribute this phenomenon to a long tradition of civic service mission of public institutions, which is to provide educational services to diverse audiences at geographically dispersed sites. The project, however, goes beyond such a descriptive explanation and tries to reveal underlying causes that have been driving or hindering the development of distance learning.

Purpose of Research

In collaboration with the National Center for Education Statistics, therefore, this project conducts large multivariate analyses of the 1995 and 1998 NCES Distance Education Survey data merged with the Integrated Postsecondary Education Data System (IPEDS) in order to reveal underlying primary factors that have been driving or hindering the development of technology-based distance education in the postsecondary higher education market. The primary objective of this information session is to share the up-to-date progress of the first phase of the project and discuss what benefits the distance learning community would receive from it.

Data and Research Questions

In the first phase of the project, the 1995 NCES Distance Education Survey data were analyzed. In the 1995 survey, 1,274 institutions were selected as a sample based on the stratified random sampling method. These institutions represent the universe of approximately 3,460 higher education institutions in U.S. The data were collected through the Postsecondary Education Quick Information System (PEQIS), and the final response rate was 94 percent.

The questionnaire asked, "Did your institution offer any distance education courses in 1994-95 (12-month academic year), or plan to offer any such courses in the next 3 years?" Three options were given: (1) Yes, offered courses in 1994-95; (2) Did not offer in 1994-95, but plan to offer in the next three years; (3) No, did not offer in 1994-95 and do not plan to offer in next 3 years. According to this answer and the type of the institution, we have formed six groups, which are (1) Public Institution DL Practitioner; (2) Public Institution DL Starter; (3) Public Institution DL Non-Practitioner; (4) Private Institution DL Practitioner; (5) Private Institution DL Starter; and (6) Private Institution Non-Practitioner. Only four-year educational institutions were included in the analysis in order to limit the scope of the study.

The questionnaire also asked to what extent, if any, the following fifteen items were keeping the institutions from starting or expanding distance education offerings. Those items include: 1) lack of fit with institution's mission; 2) lack of perceived need; 3) lack of administrative support; 4) program development costs; 5) equipment failure/maintenance costs; 6) limited tech infrastructure; 7) concerns about faculty workload; 8) lack of faculty interest; 9) lack of faculty incentives; 10) legal concerns; 11) concerns about course quality; 12) lack of access to instructional support; 13) inter-institutional problems (e.g., allocations of aid, course credit); 14) restrictive federal, state or local policies; and 15) inability to obtain state authorization. The response categories were *not at all*, *minor extent*, *moderate extent*, and *major extent*. Besides these fifteen questions, two institutional characteristic variables, such as school size and regional location, were included in the analysis. The study attempts to reveal underlying causal dimensions, which separate distance education practice at public and private 4-year institutions.

Methodology

Factor analysis and canonical discriminant analysis are used to find the best linear combinations of variables that separate these six groups of institutions described above. The best linear combination of variables expresses underlying causalities, which enable us to explain why some institutions pursue DL programs more successfully than others.

Results

The descriptive analysis has indicated that out of the total number of four-year institutions (public and private combined), 26.2% are DL practitioners, 26% are DL starters, and 47.8% are non-practitioners. When these three groups are further classified into public and private institutions, 68% of the practitioners are public and 32% are private. Of the DL starters, 25% are public and 75% private institutions. Among the institutions that expressed no intentions to offer DL programs in the near future, only 9% are public and 91% are private. These simple statistics clearly illustrate which type of institution is embracing distance learning and which is avoiding it.

The factor analysis investigation has revealed two major factors that prevent the institutions from starting or expanding distance education offerings. The first factor had high factor loadings related to faculty variables (concern about faculty workload, lack of faculty incentives and interests, and concerns about intellectual property/copy rights) as well as various resource availability variables (i.e., program development and equipment costs, inter-institutional resource issues, instructional support etc.) We call this factor, therefore, the "faculty/resource support dimension." The second factor called the "mission congruence dimension" had high factor loadings on institution's size, lack of fit with institution's mission, and lack of perceived need. These two dimensions together accounted for about 35% of the variance. Average factor scores were calculated for each of the six groups. Plotting average factor scores graphically illustrates where in the four quadrants each of the six institutions locates.

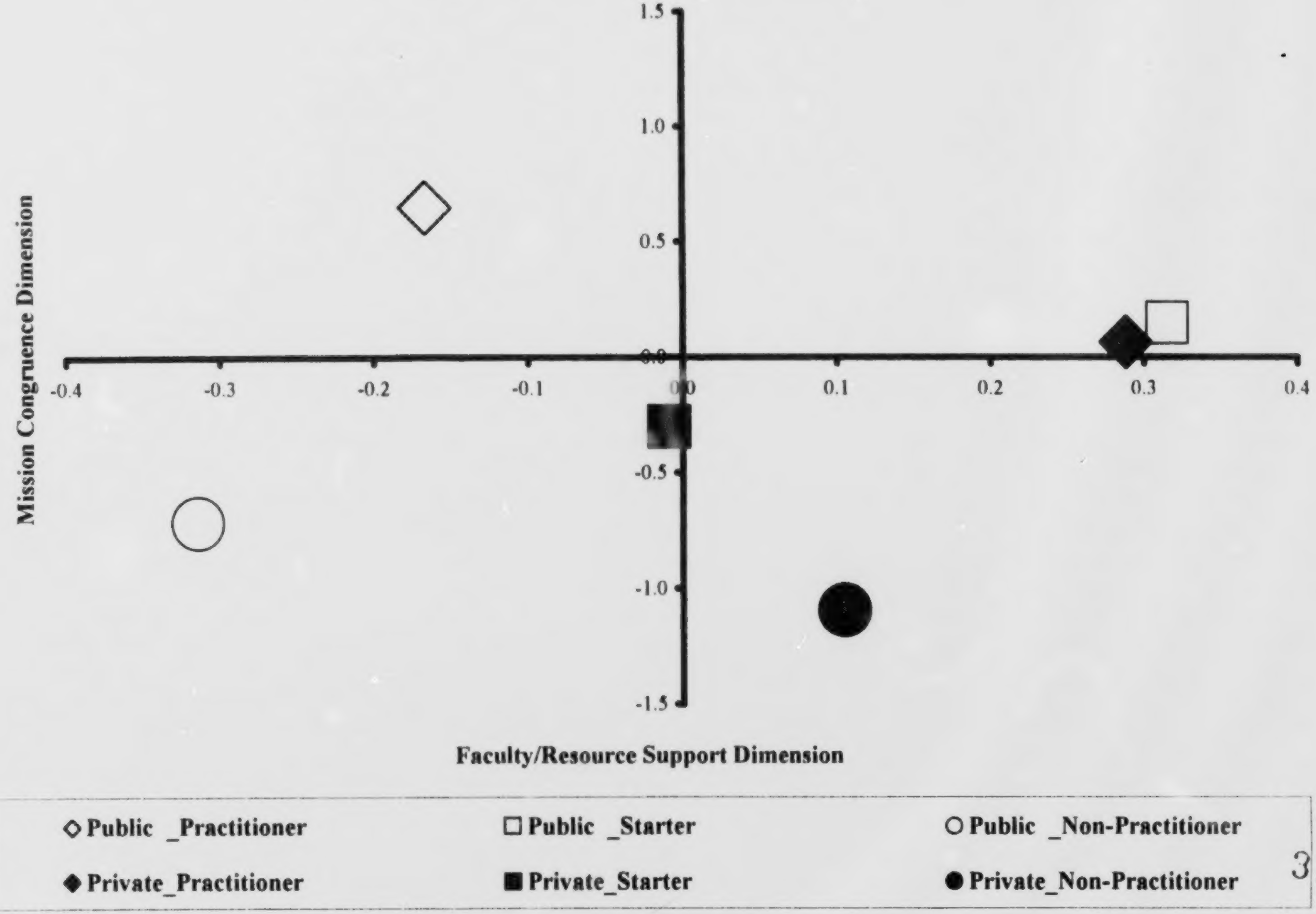
The plot as presented in Figure 1 has revealed intriguing insights on why institutions are reluctant from starting or expanding distance education programs. The private non-practitioners perceived that they had faculty/resource support. However, lack of fit with the institution's mission seemed a major stumbling block for not offering distance education programs. The public non-practitioners, on the other hand, seem inhibited from both lack of faculty/resource support and lack of mission congruence.

The DL practitioners from the public sector perceived that their institutions' missions highly match with DL course offering, but they are kept from expanding DL programs due to the lack of faculty/resource support. The DL practitioners from the private sector, in contrast, seem to enjoy sufficient faculty/resource support, but have only a moderate level of mission congruence. Public institutions that expressed their intentions to offer DL programs within three years seem in a good position. They perceived themselves with a high level of faculty/resource support as well as a moderate level of mission support. However, the private institutions that would like to offer DL programs within three years seems to need more faculty/resource support as well as the need to create a better mission fit in comparison to their public counterparts. The results of canonical discriminant analysis also have shown similar trends, which are discussed in our full report.

Summary and Discussion

It is of cardinal importance for DL administrators to understand the extent to which certain kinds of factors may be preventing institutions from fully developing distance education programs. The present study is an attempt to answer this question by conducting multivariate analysis on the 1995 National Distance Education Survey data collected by the National Center for Education Statistics. The study has revealed two primary factors, the Faculty/Resource Support factor and the Mission Congruence factor, which have successfully explained differences in distance education practice at public and private four-year institutions. Clearly, the majority of the private institutions are reluctant in offering DL programs due to their perception that offering DL courses does not match with their educational missions. However, the public institutions are generally concerned about faculty workload, interest and incentives, as well as lack of adequate resource support. Such knowledge may be very useful in developing effective strategies to assist different types of institutions with pursuing distance education as an innovative instructional option in the future.

Figure 1. Two Primary Factors Separating Distance Education Practice at Public and Private 4-year Institutions



Reference

The National Center for Education Statistics. (1997). *Distance education in higher education institutions*. Washington, D.C.: U.S. Department of Education Office of Educational Research and Improvement.

Biographical Sketches

Dr. Yuko Mulugetta holds a Ph.D. from the School of Journalism and Mass Communications at the University of Wisconsin–Madison, and an MBA from the Johnson Graduate School of Management at Cornell University. She has been Director of Research and Planning Analysis for Admissions and Financial Aid at Cornell University since 1995. She has conducted numerous researches in the field of higher education with a particular emphasis on financial aid, student employment, admissions, enrollment management, as well as financial planning for education investment. Her recent research on the market structure of distance education has originated from the unique combination of her academic and professional interests in mass communications, business, and higher education. Her studies have been published in professional and academic journals, monographs, and book chapters. Dr. Mulugetta received three national research grants in the past. In 1998, she was selected as an NCES summer institute fellow and received an intensive training in analyzing NCES databases.

Address: 203 Day Hall
Cornell University
Ithaca, NY 14853
E-mail: ymm1@Cornell.edu
URL: http://www.people.cornell.edu/pages/ymm1/
Phone: (607) 255-7969
Fax: (607) 255-5718

Dr. Abraham Mulugetta is Professor of Finance and International Business, and Director of the Center for Trading and Analysis of Financial Instruments, School of Business at Ithaca College. He received both a Ph.D. and an MBA from the School of Business at the University of Wisconsin–Madison. His academic interest lies in financial market structure, international currency markets, international closed-end funds and equity markets, personal financial planning, and higher education. He has an extensive list of publications, which include well-known journals and books. In 1994, Dr. Abraham Mulugetta established the Center for Trading and Analysis of Financial Instruments at Ithaca College, one of the first educational centers of its kind in the nation. The Center has 27 high power desktop computers, which receive via satellite real-time quotes of securities and financial information from the major international financial markets. At the Center, undergraduate business majors can learn and practice security trading with mock money, which in turn helps them deepen their understanding of how the inter-networked global financial markets function. Dr. Mulugetta has found that the Center generates self-motivation, cooperative learning, and a desire to learn through discovery among students. He has been interested in researching how technology-based education is changing the higher education market, particularly the market for four-year private institutions that emphasize undergraduate teaching, close faculty-student contacts and a residential campus atmosphere.

Address: 430 Smiddy Hall
Ithaca College
Ithaca, NY 14850-7172
E-Mail: Mulugetta@Ithaca.edu
URL: http://www.ithaca.edu/business/mulugetta.html
Phone: (607) 274-3950
Fax: (607) 274-1152

How to Deliver Self-Service Learning Opportunities in an Intranet Environment

Kathy Now, Senior Learning Systems Leader
Wisconsin Public Service Corporation

Julie Christensen, Intranet Content Coordinator
Wisconsin Public Service Corporation

Ellen Larson, Senior Process Improvement/Redesign Consultant
Wisconsin Public Service Corporation

Corporate Challenges for Us

Our company has been a very successful, quiet electric and gas utility serving conservative North Eastern Wisconsin and a small part of Michigan's Upper Peninsula. During the last ten years, this company has been rapidly transforming in order to be a leader in the deregulated, competitive world of energy services. You might call our challenge, the mouse that needs to roar.

It has been a journey, long and difficult at times, because our corporate culture was very conservative and in many ways still is. With very little employee turnover coupled with hiring mostly mid-westerners, our corporate thinking tends to be insular in nature and our actions based on traditional paradigms.

In 1996, at the beginning of this story, our corporate Internet site existed but lacked defined support. Legally, we were required to publish certain information and we had a hunch that our Marketing group might want to use this technology. Yet, there really wasn't any priority given to developing the technology.

We Began in 1997 With a Vision

As we moved to a holding company structure, and observed our new subsidiaries expand geographically, we realized that in this new deregulated world our old ways of communication were not doing the job. For example, the mechanics of employee orientation change drastically when new employees are located in Ohio, Pennsylvania, Vermont and Canada.

A team was assembled with a careful mix of employees, including those strong on vision, those with processes impacted by the rapid change, and those who were familiar with the Internet technology and issues. Their challenge was to design an appropriate infrastructure, supporting processes, and measures for effective use of the company's Internet WEB site and Intranet.

What Did Our Study Tell Us?

The team studied the history of the Internet at the company, developed business objectives for use of the Internet technology, developed a conceptual design, and identified new roles. One of the major tasks of the team was to identify opportunities for internet/intranet development—in other words—what content would be most helpful to our employees and to our customers.

Opportunities for Internet Development	**Opportunities for Intranet Development**
Conservation information Safety tips Finance/Stock information Bill paying Real-time energy use Linking to outside contacts	**Big picture** (Industry news, Corporate performance data) **Business strategies** **HR information** (Policies, Guidelines, Benefit information, Hiring/Selection process, Learning/Training options) **Job-related information** (Technical, Processes, Customer data, Job aids)

What Were Our Recommendations?

The team recommended that we establish a Core Support Team and a decentralized Publisher's Network. The decentralized Publisher's network is significant. It has been a key to our success because the publishers work daily with their content providers. It also has been a source of much frustration because publishing, in many cases, has not been given the priority it needs.

The team encouraged development that reflects system-level thinking. Their vision was an Intranet organized not by department within the corporation, instead organized by business systems and processes. This approach recognizes the significance of interdependencies within the corporation and promotes a more intuitive method of organizing information. With this design, ease of navigation should be optimized.

The final recommendation was to establish a Core Support Team with a reporting relationship in a neutral area of our company. Typically, Internet/Intranet development is the responsibility of either ITS, or Marketing, or Corporate Communications. Because it was essential that this tool serve the entire corporation, the importance of establishing the team in a neutral area of the company was a priority.

What Does Our Support Structure Look Like?

Our strategy was to build a Core Team whose full time jobs would be to implement our vision. The original staff consisted of a project leader, an Internet Content Coordinator, an Intranet Content Coordinator, Web Technical support, and Infrastructure Technical Support.

This Core Team would coordinate a group of employees selected from each organization within the corporation who had the knowledge and skills (or ability to learn the skills) to publish for their organization. The Publishers would continue to report to their organizations and perform their current duties in addition to publishing. They would have a network relationship with the Core Team.

How Does Our Publishing Process Work?

Analyze and Plan

We emphasized to our Publishers how important it is to plan prior to developing an Intranet site. When presented with new content, a publisher should clarify the topic and expectations by identifying related business processes, by understanding current information and by establishing responsibility for content.

It is essential to know who is the audience and how users will use the information. A Publisher must determine if the Intranet is available to the audience and whether the audience is skilled at using the Intranet. During planning, one must determine if there is a benefit in using Web Technology or if traditional methods of presentation would be more appropriate. The publisher considers which approach provides more timely/accurate information, is more convenient and offers a better level of customer service. Costs and legal requirements must also be considered.

Design considerations include where and how the information will be presented. What techniques such as forms, email, visual effects are required? How often will the information change and who is responsible for the content and the updating? How long should the information be displayed? Does the site require special security?

With any plan, prioritization is critical and sometimes very difficult to establish. In prioritizing, the publisher must consider current workload, the size of the development effort, whether or not the request is strategic or legal in nature, and whether commitments from others are needed.

Design and Develop

During the design phase, the publisher working with content providers identifies and confirms objectives, flowcharts the site, and storyboards the pages. To confirm that there are no misunderstandings in expectations, the publisher and content provider "walkthrough" the storyboard and checkpoint it against objectives.

During development, the publisher assembles graphics, codes HTML pages and links, tests and conducts demos for content provider. They work with the content provider to determine appropriate measures. The final step before publishing is to conduct a usability test.

Publish

The publisher tests the site one more time after it is transferred to a production environment. This testing includes rechecking graphics and links as well as verifying that searches find the new pages.

One of the most important steps in publishing is to promote the site. Often, the content providers will write and place introductory information using traditional communication media such as weekly newsletters. But the publisher can highlight the new site in "What's New" areas and can use "push technology" by using email to notify the primary users of the site.

Deliver Content (Evaluation Phase)

One of the great characteristics of the Intranet/Internet approach is that it can be changed quickly and often. So, the Evaluation Phase is extremely important. We want to keep the information on the Intranet/Internet timely and helpful. It must meet the objectives defined in the planning stages.

Thus, the Deliver Content Phase is really an evaluation where we analyze measurement data against objectives. We maintain content, verify links and purge information as required. We solicit feedback and respond to it promptly. We look for patterns in the feedback and incorporate new ideas into the site.

What Have We Struggled With?

Our culture is not accustomed to system thinking. By system thinking we mean looking at the "big picture" rather than a department, a process, or a category. When one steps into the bigger system, helpful links will be identified, redundancy of information can be eliminated and navigation can be much more intuitive rather than based on memory.

Redundancy, processes overlap between different areas. This is not abnormal, but as we published sites on the Intranet, we had to work with our associates to define "ownership" and "scope" restrictions.

While we published the basic Intranet content, the company was in the midst of a merger. This activity added complexity. Not only was the content was in flux, but we had to address how to handle grandfathered and policies unique to certain subsidiaries. This change state created challenges for planning and design.

In many ways, our audience resisted change. Not every employee has a PC; not everyone is comfortable and/or willing to use the Intranet; and not everyone likes to use the same access method all the time. Thus, as banks offer options (automatic tellers, voice response, Internet access) and most customers use several of the options, we offer options as well.

What Have Been Some of Our Successes?

Without strong support from senior management, our progress would have been much slower. Senior management continues to encourage project teams and work groups to publish communications, progress updates and specific information on the Intranet.

We know that we continue to make progress because requests for new sites are increasing. As publishers become more comfortable with the technology, we have an increasing number of sites incorporating interactive applications such as tutorials, forms for feedback, and search/retrieve techniques.

One of the ways we measure if we are meeting our objectives is to track average number of users per day. This rate has been increasing steadily and we can usually identify the cause of each significant increase.

The discussion forums that we've initiated are beginning to flourish. In a typical discussion forum, employees post questions concerning key corporate initiatives. The champion of that initiative posts an answer within 24 hours. Another use of discussion forums simulates a bulletin board where employees can post items they are selling. These items have ranged from theater tickets, to homes and vehicles, to pets.

How Does a WPSR Learner Navigate?

There is a variety of information available on the Intranet. So when a learner accesses the system, he/she must decide "Why is it that I'm here? What are my objectives?" It might be that the user wants to further personal learning or better understand the corporate culture. The user might be looking for news, or to stay abreast of a study in progress. An employee may want to offer ideas or concerns to a project team. Finally, the employee may want to look up operational information such as policies or procedures, scheduled events or job openings.

What Techniques Do We Use?

We've used many techniques (or user interfaces) as we built and continue to build our Intranet. It is important to choose which technique is most appropriate for each objective. One might consider our basic building block to be the home page. We have home pages for departments, studies and organizations. We also have home pages for employee services such as credit unions and campgrounds.

On some sites, we offer the option of completing a survey. On others we use forms to solicit ideas and concerns. As mentioned previously, quite a few "discussion forums" are active. Project teams use forums to post minutes, frequently asked questions, and timetables. Individuals can use them to ask business-related questions or to post personal items such as items for sale.

Through the Learning Center site, employees can request books from the library, check course objectives and schedules. They can follow links to valuable learning sites on the Internet.

We plan to develop more tutorials to be available on the Intranet. We have had good success with our tutorial that teaches the basics of using the Internet/Intranet. It covers navigation, bookmarking techniques, and other browser features.

In all the techniques we use, we strive to keep the information and its presentation fresh, up-to-date and most of all useful. We continually improve existing sites by soliciting and analyzing feedback. Our audience's point of view is our point of view!

Biographical Sketches

Julie Christensen,as the Internet Content Coordinator, does consulting and coordinating for 45 Intranet publishers. She acts as liaison between management and the publishers. Before this, she spent three years working on the Information Technology Service Help Desk.

Address:
E-mail: jchrist3@wpsr.com
Phone: (920) 433-5720
Fax: (920) 433-6882

Ellen Larson, as Process Improvement Advisor for the Human Resource Department, has worked on a variety of system development projects. She now supports Publisher duties for Intranet page design and development as it relates to HR systems. One of Ellen's recent projects was to create a self-service leadership section for leadership action plan development.

Address:
E-mail: elarson@wpsr.com
Phone: (920) 433-1544
Fax: (920) 433-1744

Kathy Now, as a Senior Learning Systems Consultant, has been working in the design and development of learning systems for individual, team, and organizational learning. She was in involved in the development of the learning center program, design of the internet/intranet environment and is currently working on several organizational learning initiatives.

Address:
E-mail: know@wpsr.com
Phone: (920) 433-5570
Fax: (920) 433-1744

What the Distance Learner Says About Support: Research Results

Robert A. Oehlkers
Senior Instrumentation Technologist
University of Wisconsin–Madison

Introduction

Kolbe and Bunker (1997) in a study examining nine years of articles in *The American Journal of Distance Education* found only 2.3% of the articles classified under student administration and support. Most of the support literature such as Paulett, 1988; Granger and Benke, 1995; Reid 1995; and Sherron, 1998 discussed support as seen from the viewpoint of the learning institution. The focus has been on the services the institution has a responsibility to provide such as advising, counseling, learning resources, and technical delivery. This paper describes a small research study focusing on what the students of a distance program had to say about support. Support discussed by the distance learners include both formal institution support and informal non-institutional support such as the support of family, friends, peers, workplace, and mentors.

Purpose and Methodology

The purpose of the study was to identify the learning support registered nurses experienced in their first semester of a distance education collaborative program. The research was conducted in partial fulfillment of a master's degree in Continuing and Vocational Education at the University of Wisconsin-Madison (Oehlkers, 1998).

A phenomenological methodology was used for the study. Sixteen registered nurses, all female, enrolled in their first semester of the University of Wisconsin Collaborative Nursing Program (UW-CNP) (Lasky and Bradshaw-Rouse, 1995) were extensively interviewed at the beginning of their first semester and again on completion of the semester. The interviews were transcribed verbatim and reviewed. With constant comparison, themes emerged from the rich insightful words of the nurses.

Volunteer Participants

The nurses volunteered for this study by returning a postcard included with a recruitment letter send out by the UW-CNP. The postcard went directly to the researcher and the names of the participants were not disclosed to the UW-CNP.

The sixteen participants of the study, all female, resided in twelve different Wisconsin counties. The average age of the participants was thirty-eight, with a range of twenty-four to fifty-five years. Twelve of the sixteen were married and six of the sixteen had children living at home.

All the participants were working registered nurses licensed in the State of Wisconsin. Average hours employed per week was thirty-five, with a range of sixteen to forty. The working experience as a nurse varied from two to twenty-four years.

All the participants were in their first semester of the UW-CNP; however, eight of the group had previously enrolled in at least one college credit course within the last year. Of the remaining eight nurses, the years since taking a college credit course ranged from four to twenty-four.

Discussion

Constant comparison of the interview transcripts led to the development of themes into the categories of support listed below. Most often learning institutions only concern themselves with their formal structured system of support which they have a legal responsibility to provide. However, the organized support structure by the institutions may not represent the complete picture in terms of learner support. The learners live in a broader social context (Gibson, 1998). The support themes therefore include both formal institutional and non-institutional informal classifications.

Formal Support Themes

- The Go-To Person: My Advisor
- Show Me/Tell Me: Orientation
- Readily Accessible: My Instructor
- Depends Where I Live: Learning Resources
- In the Background, Ready to Help: The Technician

Informal Support Themes

- They Love Me and Help Me: My Family
- Someone to Talk to: My Friends
- Kindred Spirits: My Classmates
- There When You Need Her: My Mentor
- Wonderful/Awful or Someplace in Between: My Job
- The Reflective Learner: Me
- Stories

Seidman (1998) quotes Peter Reason on the question, "Is telling stories science?" (p. 2). Reason's response was:

> The best stories are those that stir people's minds, hearts, and souls and by so doing give them new insights into themselves, their problems and their human condition. The challenge is to develop a human science that can more fully serve this aim. The question then, is not "Is story telling good science?" but "Can science learn to tell good stories?" (p.3)

Stories that touched my heart and soul were often about the family's support of the returning adult student. For example, an interesting dynamic was the apparent enhancement in the relationships between mother and the older child when the mother starts taking classes. Children provide educational support, especially computer support, but it seems there is more than just computer training provided.

> I was real surprised when my son came home for the weekend [college student], I kind of made him but he actually helped me [with computer]. But it is still like support and actually then when I commented on what my grades were, and, I have been in school in the past and that wasn't the way it was, so that is different. And, that actually feels kind of good too. [Joyce_2]
>
> My 19 year old is going to MATC taking classes so he has a little bit better appreciation of what I'm going through. I think there is more of a common bond because the boys have grown older and sort of left the house a little bit more. I think emotionally, we sort of were pulling apart and I think [now] we're a little bit better connected. [Jane_1]
>
> And then our son is a senior in high school and he thinks it is pretty cool that the old lady is in college which he'll be going next year. [Lois_1]

Getting emotional support and being proud of the student/parent by family members parallels findings from Tremaine and Owens (1984) and Pym (1992) about women returning to school.

Conclusion

Clearly a paper of this length can not begin to satisfactorily tell the nurses' stories. The key point is that adult students face special challenges in furthering their formal education. Many of these challenges are related to their multiple roles and responsibilities. Support to assist the student takes many forms from formal institutional programs to informal support from family, friends, peers, mentors and the workplace.

As educators and educational administrators we continually need to examine our formal support functions. My opinion is that more work needs to be done in orientation programs that will aid adults in the transition to being students. In the area of informal supports, institutions need to be family and work friendly to help students and families succeed.

References

Gibson, C. C. (1998). The distance learner in context. In C. C. Gibson (Ed.), *Distance learners in higher education: Institutional responses for quality outcomes* (pp. 113-125). Madison, WI: Atwood Publishing.

Granger, D., & Benke, M. (1995). Supporting students at a distance. *Adult Learning, 7* (1), 22-23.

Kolbe, M. A., & Bunker, E. L. (1997). Trends in research and practice: An examination of The American Journal of Distance Education 1987 to 1995. *American Journal of Distance Education, 11*(2), 19-38.

Lasky, P., & Bradshaw-Rouse, J. (1995). UW to offer bachelor's program to rural nurses. *Nursing Matters, 6*(9), 1,16.

Oehlkers, R. A. (1998). *Learner support experienced by registered nurses in their first semester of a collaborative distance RN-BSN program: A phenomenological study.* Unpublished master's thesis, University of Wisconsin–Madison.

Paulet, R. O. (1988). Factors influencing successful counseling in selected distance education programs. *Journal of Research and Development in Education, 21*(3), 60-64.

Pym, F. R. (1992). Women and distance education: A nursing perspective. *Journal of Advanced Nursing, 17*, 383-389.

Reid, J. (1995). Managing learning support. In F. Lockwood (Ed.), *Open and distance learning today.* London: Routledge.

Sherron, G. T. (1998). In support of distance education. *Syllabus, 11*(7), 44, 46-47.

Seidman, I. E. (1998). *Interviewing as qualitative research: A guide for researchers in education and the social sciences* (2nd ed.). New York: Teachers College Press.

Tremaine, M., & Owen, J. (1984). The female majority: Women who study extramurally. *Teaching at a Distance, 25*, 45-50.

Biographical Sketch

Robert Oehlkers is a Senior Instrumentation Technologist at the University of Wisconsin –Madison's Space Science and Engineering Center. He holds a BS in Business Administration from the University of Wisconsin–Platteville Extended Degree program and the MS in Continuing and Vocational Education from the University of Wisconsin–Madison.

Address: Space Science and Engineering Center
1225 W. Dayton St.
Madison, WI 53706
E-mail: oehlkers@facstaff.wisc.edu
Phone: (608) 263-6761
Fax: (608) 263-6738

Making the Transition:
Helping Teachers to Teach Online

Rena M. Palloff, Ph.D.
Crossroads Consulting Group and The Fielding Institute
Santa Barbara, California

Keith Pratt, Ph.D.
Crossroads Consulting Group and Ottawa University
Ottawa, Kansas

Entering the Online Classroom

Colleges and universities today are in transition. Factors contributing to that transition are economic pressures from mounting costs, demands by the business world for graduates who are able to function in a knowledge society, and greater diversity among students who choose to go on for higher education (Palloff & Pratt, 1999, p. 3).

The response of many institutions to these changes is the development of online distance learning courses and programs. These courses and programs can take many forms including: The creation of a static course on a website which students can access at any time (or course conversion), but which includes minimal interaction among the learners; the development of a course site involving the use of asynchronous discussion as the basis for teaching and learning; and other technological advances such as synchronous chat and streaming audio and video. The more that instructors involve their students in the learning process online, however, the more likely that students will achieve a successful learning outcome.

The online classroom is a potentially powerful teaching and learning arena in which new practices and new relationships can make significant contributions to learning. In order to successfully navigate the power of this medium in education, faculty must be trained not only to use technology, but also to shift the ways in which they organize and deliver material. This shift can maximize the potential for learners to take charge of their own learning process and can facilitate the development of a sense of community among the learners.

The shift to online learning poses enormous challenges to instructors and their institutions. Many faculty and administrators believe that the cyberspace classroom is no different from the face-to-face classroom and that approaches used face-to-face will surely work online. Many further believe that all that is needed to successfully teach online is to "convert" the course material. We believe, however, that when the only connections we have to our students is through words on a screen, we must pay attention to many issues that we take for granted in the face-to-face classroom (Palloff & Pratt, p. xiv). It is our best practices that must follow us into the cyberspace classroom and those practices are the basis for what we term "electronic pedagogy," or the art of teaching online.

Keys to Success

The transition to the cyberspace classroom can be successfully achieved if attention is paid to several key areas. They are: Ensuring access to and familiarity with the technology in use; establishing guidelines and procedures which are relatively loose and free-flowing, and generated with significant input from participants; striving to achieve maximum participation and "buy-in" from the participants; promoting collaborative learning; and creating a double or triple loop in the learning process to enable participants to reflect on their learning process. All of these practices significantly contribute to the development of an online learning community, a powerful tool for enhancing the learning experience. Each of these will now be reviewed in more detail.

Access to and Familiarity With Technology

Many institutions mistakenly believe that all it takes to implement an online distance learning program is to install a fancy software package and train faculty to use it. Certainly, an instructor needs to be knowledgeable about the technology in use and comfortable enough with it to assist a student should difficulty be encountered. An instructor should also be able to construct a course site that is easy for students to access and use (Palloff & Pratt, 1999, p. 59). However, the instructor's responsibility must not end there. "Technology does not teach students; effective teachers do" (Whitesel, 1998, p. 1). The issue, then, is not the technology itself, but how we use it in the design and delivery of online courses.

A related and important issue is our students'ability to access the course site and successfully navigate it. The most visually appealing course, complete with audio, video, and chat is useless if a student is utilizing old hardware or is living in a remote area with limited Internet access. Consequently, the software used for course delivery should be:

- Functional
- Simple to operate for both faculty and students
- User-friendly, visually appealing, and easy to navigate (Palloff & Pratt, p. 64)

Establishing Guidelines and Procedures

An important beginning to an online course is the presentation of clear guidelines for participation in the class as well as information for students about course expectations and procedures. Guidelines are generally presented along with the syllabus and a course outline as a means of creating some structure around the course. Guidelines, however, should not be too rigid and should contain room for discussion and negotiation. "Imposed guidelines that are too rigid will constrain discussion, causing participants to worry about he nature of their posts rather than to simply post" (Palloff & Pratt, p. 18). It is useful to use the guidelines as a first discussion item in a class. This facilitates students in taking responsibility for the way they will engage in the course and with one another, and serves to promote collaboration in the learning process.

Achieving Maximum Participation

Participation guidelines in an online course are critical to its successful outcome. As online instructors, however, we cannot make the assumption that if we establish minimum participation guidelines of two posts per week, for example, that students will understand what that means. We must also include expectations about what it means to post to an online course discussion. "A post involves more than visiting the course site to check in and say hello. A post is considered to be a substantive contribution to the discussion wherein a student either comments on other posts or begins a new topic" (Palloff & Pratt, p. 100).

In addition to being clear about expectations for participation, the following are some suggestions that we have found will enhance participation in an online course:

- Be clear about how much time the course will require of students to eliminate potential misunderstandings about course demands.
- As the instructor, be a model of good participation by logging on frequently and contributing to the discussion.
- Be willing to step in and set limits if participation wanes or if the conversation is headed in the wrong direction.
- Remember that there are people attached to the words on the screen. Be willing to contact students who are not participating and invite them in. Create a warm and inviting atmosphere which promotes the development of a sense of community among the participants. (Palloff & Pratt, p. 107).

The incorporation of these suggestions into the development of an online course can assist in the promotion of collaborative learning, potentially contributing to stronger learning outcomes.

Promoting Collaboration

Collaborative learning processes assist students to achieve deeper levels of knowledge generation through the creation of shared goals, shared exploration, and a shared process of meaning-making. Jonassen et al. (1995), note that the outcome of collaborative learning processes includes personal meaning-making and the social construction of knowledge and meaning. Stephen Brookfield (1995), describes what he terms "new paradigm teachers" who are willing to engage in and facilitate collaborative processes by promoting initiative on the part of the learners, creativity, critical thinking, and dialogue. Given the separation by time and distance of the learners from one another and from the instructor, and given the discussion-based nature of these courses, the online learning environment is the type of learning arena that, "(a) lets a group of students formulate a shared goal for their learning process, (b) allows the students to use personal motivating problems, (c) takes dialogue as the fundamental way of inquiry" (Christiensen & Dirkink-Holmfield, 1995, p.1). Engagement in a collaborative learning process forms the foundation of a learning community. When collaboration is not encouraged, participation in the online course is generally low and may take the form of queries to the instructor, rather than dialogue and feedback.

Promoting Reflection

When students are learning collaboratively, reflection on the learning process is inherent. Additionally, when students are learning collaboratively online, reflections on the contribution of technology to the learning process are almost inevitable. "The learning process, then, involves self-reflection on the knowledge acquired about the course, about how learning occurs electronically, about the technology itself, and about how the user has been transformed by their new-found relationships with the machine, the software, the learning process, and the other participants" (Palloff & Pratt, 1999, p. 62).

The construction of a course that allows these naturally occurring processes to unfold greatly enhances the learning outcome and the process of community building. It is more than reflection on the meaning and importance of course material. The reflection process transforms a participant in an online course from a student to a reflective practitioner and hopefully sets in motion the potential for lifelong reflective learning. Purposeful facilitation of this process involves incorporating the following questions into a course:

- How were you as a learner before you came into this course?
- How have you changed?
- How do you anticipate this will effect your learning in the future? (Palloff & Pratt, 1999, p. 140)

The reflective process embedded in online learning is one of its hallmarks and most exciting features. If an instructor is willing to give up control of the learning process and truly act as a facilitator, he or she may be amazed at the depth of engagement with learning and the material that can occur as a result.

The Final Transition: Evaluation of Students and Ourselves

Harasim et al. (1996) state, "In keeping with a learner-centered approach, evaluation and assessment should be part of the learning-teaching process, embedded in class activities and in the interactions between learners and between learners and teachers" (p. 167). In the spirit of collaboration and reflection, evaluation of student progress and performance should not fall to the instructor alone. Students should be encouraged to comment on each other's work. Self-evaluation should be embedded in performance evaluation. Quality and quantity of participation should be a measure of overall student performance. Examination may not be the best measure of student performance in the online environment. In a truly collaborative learning process, concerns about cheating become irrelevant.

Making the transition to the online learning environment means developing new approaches to education and new skills in its delivery. It means engaging in self-reflection as instructors to determine our own comfort level in turning over control of the learning process to our students. It means promoting a sense of community among our students to enhance their learning process. But, most of all, it means abdicating our tried and true techniques that may have served us well in the face-to-face classroom in favor of experimentation with new techniques and assumptions. In so doing, we will meet the challenges of preparing our students to navigate the demands of a knowledge society and, in the process, learn something new ourselves, thus supporting our own quests for lifelong learning.

References

Brookfield, S. D. (1995). *Becoming a critically reflective teacher*, San Francisco, CA: Jossey-Bass.

Christiensen, E., & Dirkinck-Holmfeld, L. (1995). Making distance learning cooperative. Available: http://www.cscl95.indiana.edu/cscl95/chritia.html

Harasim, L., Hiltz, S. R., Teles, L., & Turoff, M. (1996). *Learning networks*, Cambridge, MA: MIT Press.

Jonassen, D., Davidson, N. M.., Collins, M., Campbell, J., & Haag, B. (1995), Constructivism and computer-mediated communication in distance education. *The American Journal of Distance Education*.

Palloff, R., & Pratt, K. (1999). *Building learning communities in cyberspace: Effective strategies for the online classroom*, San Francisco, CA: Jossey-Bass.

Biographical Sketches

Rena Palloff has been working extensively in health care, academic settings, and addiction treatment for the last 20 years. She is a faculty member at the Fielding Institute in the Organizational Design and Effectiveness Program, which offers a masters degree completely online and an Assistant Professor at John F. Kennedy University, teaching Counseling Psychology students in the in the Graduate School for Holistic Studies. Additionally, she teaches classes on organizational behavior and management and leadership on an adjunct basis for the International Studies Program at Ottawa University in Ottawa, Kansas in various sites throughout the Pacific Rim.

Keith Pratt began his government career as a Computer Systems Technician with the Air Force in 1967. Keith served in various positions including, Supervisor Computer Systems Maintenance, Chief Logistics Support Branch, Chief Telecommunications Branch and Superintendent Secure Telecommunications Branch. After leaving the Air Force, Keith held positions as Registrar and Faculty (Charter College), Director Chapman College, and Trainer and Consultant (The Growth Company). Keith is currently an Assistant Professor in the International Studies Program and the Chair of the Management Information Systems Program, main campus and overseas, at Ottawa University in Ottawa, Kansas.

Rena and Keith are managing partners in Crossroads Consulting Group. Since 1994 they have collaboratively conducted research and training in the areas of electronic group facilitation, face-to-face and electronic community-building, distance learning, and management and supervision. They are also continuing education providers, offering courses online to assist licensed professionals in the state of California in completing their continuing education requirements. They have recently published a book entitled, *Building Learning Communities in Cyberspace*, available through Jossey-Bass.

Address: Crossroads Consulting Group
206 Lagunaria Lane
Alameda, CA 94502
E-mail: crcgroup@ix.netcom.com
URL: www.xroadsgroup.com
Phone: (510) 769-1340
Fax: (510) 769-1340

Success Factors in Telepresence Teaching: Results From the Blueprint for Interactive Classrooms (BIC) Project Involving European Universities

Sally Reynolds, Gee Cammaert, and Johan Van Heddegem
Audiovisual Centre
Katholieke Universiteit Leuven
Belgium

Background and Goals of the Project

Over the past 4 years a consortium of European Universities, working together within the project "Blueprint for Interactive Classrooms" (BIC), has been developing prototypes and resource materials for people interested in setting up and using interactive Telepresence teaching facilities over ISDN and Satellite networks. While many educational and training organisations are turning to videoconferencing and other two-way interactive systems for various teaching purposes, the members of this consortium found that there was a lack of freely available practical resources for others interested in setting up their own facilities. This network of Universities which includes leading higher level institutions in Belgium, Finland, France, Ireland and Italy all had already extensive experience in setting up and using videoconferencing over various networks and bandwidths and satellite-based systems for teaching purposes.

The project partners understand "Telepresence Teaching" to mean synchronous teaching that includes systems that are set up with either two-way video and audio or one way video and two way audio. By concerning themselves with just synchronous telepresence teaching using some form of network, they are obviously not dismissing other forms of telematically supported teleteaching but see telepresence teaching as one useful tool in a wide mix of possible media. It is an option that can provide a very useful and effective resource for the institution embarking upon distance teaching. It can be used to reach remote learners in another campus or study centre, it can be used to bring in outside or remote expertise and it can be used for group and collaborative work. Advice is given about general media mix, on matching your technological approach with your pedagogical objectives and on designing your facilities in the most cost-effective and pedagogically sensitive way. The project provided a unique opportunity to explore the topic of telepresence teaching further and to produce some useful and practical end products for other educational and training organisations that wished to set up similar systems.

With the support of European Commission funding under the Telematics Applications Programme (Education & Training) the partners built five fully functioning Telepresence teaching sites. They began by considering the various different types of learning scenarios where synchronous interaction played an important role. This was considered from the viewpoint that a mixed media approach was inevitably better than a single media solution and continue to recommend that all newcomers to this environment begin by examining the various different types of learning and teaching activities they wish to establish, decide what these are and then match the environment accordingly. So some courses may require a mix of off-line reading and viewing of videotape with e-mail tutoring and occasional multi-site videoconferences, whereas others may consist of regular small group videoconferences for collaborative work with access to web-based resources in between synchronous sessions. By comparing and contrasting the different characteristics of each teaching situation, the BIC researchers collected data on teaching styles, learning environments and the effects of budget.

The range of functional demonstration teaching facilities built by each of the participating universities provide a working laboratory environment for testing and evaluating various technologies and support systems for teaching at a distance. These include the interactive teleteaching classrooms, studio and mobile facilities located at Katholieke Universiteit Leuven (K.U.Leuven) in Belgium, the Telepresence classrooms and other facilities at the Audio Visual Centre in University College Dublin, the interactive classroom located at the Université de Nancy II in France, the facilities for teaching at a distance in the Politechnico di Milano in Italy and the range of facilities managed by Helsinki University of Technology (Dipoli) in Finland. All these facilities can be visited by appointment and staff and users of the systems regularly run "Open Days" and offer their experience to others who are interested.

The purpose of this research was to design a range of interactive telepresence classrooms, suited to different purposes, but at the same time compatible and complementary. Each classroom facilitates the delivery or reception of courses over a variety of telematics networks, and incorporates a variety of interaction mechanisms (e.g., ISDN videoconferencing, telephone, and computer conferencing). The classrooms are designed to suit the following teaching and learning scenarios:

◆ *An automated teaching presentation area, with students at remote sites:*
The telepresence classroom at University College Dublin, Ireland allows the teacher to control the delivery of a class to, and interaction with, students in remote locations. The students may be on their own or in learner groups.

◆ *An automated teaching presentation area, with local and remote students:*
Similar to the first scenario, the classroom at Politecnico di Milano (POLIMI), Italy, however, has a group of students in the same location as the teacher as well as a remote group.

◆ *An area suited to group presentation and interaction:*
This interactive classroom, at Katholieke Universiteit Leuven in Belgium is designed to facilitate presentation by a group of experts from a location, to a learner group in another location, which may vary.

◆ *Learning area for a lone learner:*
This learning area, designed by Helsinki University of Technology, Finland, caters to a learner who is receiving and interacting with the class on their own; for example at home, in an SME, or in a library.

◆ *A learning area for a group of learners:*
The interactive classroom being designed by the Université Nancy 2 in France caters for learners who are part of a group but are at a remote location from the teacher.

The Project Handbook and Web-Site

In order to make available the experience and expertise developed within the project consortium, both a published handbook and a web-site are now available. The purpose of the handbook is to provide a definitive guide to building telepresence classrooms based on the practical experience of the partners active within the project consortium. It allows the reader to construct classrooms using off-the-shelf products where these are available and cost-effective.

Packed with ideas on everything from furniture placement to technical guidelines, the handbook is indispensable for teachers and administrators planning to implement a telematic component to learning. Complex it is, but this advice is well within reach of educators and authorities. With plenty of pictures, check-lists, glossaries and diagrams, it can be used by technicians and managers alike and includes interesting case studies of the Universities involved showing exactly how they set up their own facilities. The goal for project implementers was simple: distance learners deserve greater access to more effective courses at low delivery costs.

The handbook is divided into 6 main chapters. The main section, Chapter 2, **Building an Interactive Classroom**, takes the reader through the detail of the six key tasks which the project partners believe are involved in building a classroom. These are:

Task 1 **Designing the Teaching and Learning Activity** which involves assessing the requirements of those involved in the teaching and learning process and deciding on the styles and activities which the reader wishes his/her classroom to accommodate.

Task 2 **Designing the Teaching and Learning Environment** involves working out the room layout, furniture and equipment that will suit the teaching and learning activities as well as meeting the technical requirements.

Task 3 **Sound – A Key Requirement**, focusing on the element that usually makes or breaks a live telepresence event – good sound. It describes how to deal with classroom noise, how to treat rooms acoustically and dealing with audio equipment.

Task 4 **Choosing and Buying the Technology** outlines the attributes of various items of equipment – cameras, microphones, etc – to allow the reader decide which suits their needs best, as well as information about standards and protocols.

Task 5 **Furniture and Other Items** outlines the factors to take into consideration when buying furniture and other teaching aids for the classroom.

Task 6 **Installing the Classroom** deals with implementing the original design including getting all the equipment installed properly.

Chapter 3, entitled **Testing It Works,** outlines how the classroom should be tested, following the six-step building stage. Chapter 4, **How to Use the Classroom**, offers a guide to using the interactive classroom to its full potential for a range of users from teachers to technicians.Chapter 5, **Trouble Shooting**, pinpoints procedural areas that could create difficulties and suggests simple but effective remedies. Chapter 6, **Case Studies**, includes the specific details of the 5 real-life classrooms which have already been built by the project partners and as already described. Each of the case studies outlines the steps taken in establishing the interactive classrooms including dealing with problems encountered along the way. The five case studies are all quite different, catering for a range of classrooms, from one suitable for solitary learners at home to one catering for a large lecture theatre in a University.

The project web-site, http://www.linov.kuleuven.ac.be/BIC, is constantly up-dated with information about the project and, at the moment, outcomes from the demonstration phase including evaluation results. In addition it contains a help-desk function which allows web-site visitors access to the expertise in the various partner sites. There is also an archive and further information about the project itself and the partners involved including video clips of the various facilities in use.

Outcomes of the Project

The project has now reached its demonstration phase that includes a large-scale evaluation activity. Each of the partners is involved in extensive large-scale demonstration activity that allows the partners really evaluate the classrooms in mainstream working environments. These demonstrations are described according to whether they are primarily concerned with Knowledge Transmission or Collaborative Working.

Knowledge Transmission

The Pentalfa project, spearheaded by the Medical Faculty in K.U.Leuven, is one of the main demonstration activities within BIC. Pentalfa involves weekly multipoint videoconferences from K.U.Leuven to 4 remote hospital sites in Flanders aimed at providing accredited continuing education opportunities for medical specialists on various different topics in the region. Each week approximately 300 specialists attend and the system comprises high-quality (384 kbit) videoconferencing facilities with specialised support networks including an intranet which is used to support the presentation of high-resolution visuals as part of presentations, dual screens and a voting system (handsets with built-in microphone) which is used for interaction as well as the normal audio interface. Pentalfa has been running since October 1998 and already a number of interesting evaluation results have emerged.

The demonstration activities being managed by the Politechnico di Milano focus primarily on the classrooms being used as part of the normal teaching facilities in typical undergraduate traditional university campus settings. Three different large-scale under-graduate courses are being evaluated from a number of different viewpoints and involve classroom facilities in both Milan and Como and students studying different engineering courses.

Helsinki University of Technology (HUT) is managing two demonstration activities, the first is part of their collaboration with the Finnish company Nokia and is on the topic Engineering science & research methodology for company engineers. This course uses a mix of technologies and includes some elements of face-to-face training. The second demonstration activity being managed by HUT involves learners in training centres in Spain and is part of a larger ADAPT project which aims to create a model for the development of effective training networks.

Collaborative Working

The demonstration activities being managed by the Université de Nancy 2 (UN2) lay more emphasis upon the idea of collaborative working then knowledge transmission. The telepresence teaching facilities designed and built by UN2 are especially designed to support such activities in a interactive classroom and in this phase are being used to support post-graduate business studies in UN2. They are also being used to support student mobility which is included in the evaluation.

Evaluation

The primary purpose of the evaluation process is to assess the classrooms according to the following criteria:

- Pedagogical effectiveness
- User-friendliness
- Cost-effectiveness.

This process is still going on; the outcomes of it will be made public in June 1999 with the production of the final project evaluation deliverable for the European Commission in July 1999. It will include not only the results of the evaluation process with each of the demonstrators but will also include the various tools used by the evaluation team. The tools being used obviously depend upon the individual scenario of each demonstrator but include user questionnaires, observational analysis, measurement tools including ways to measure level and type of interaction and cost-benefit analysis of the different teaching and learning scenarios.

Although the process is not yet complete, it is possible to draw some conclusions based upon the evaluation of the demonstrators that have already taken place. First of all, it is clear that telepresence teaching using some form of interactive classroom can play an important role in distance teaching. Users appreciate the possibility of meeting one another at the same time and it has an important role to play particularly with regard to motivation and building an effective group dynamic. Practical advantages are particularly to the fore in the continuing professional development target audience as proven by the medical specialists taking part in Pentalfa in Flanders. An analysis of the first 12 sessions (almost 850 returned questionnaires) reveals that the average time saving per participant was 104 minutes, which is a significant saving and an important consideration particularly with regard to this target audience.

There is no evidence to suggest thus far that users, either learners or teachers, are resistant to this form of teaching, indeed the opposite seems the case. Many teachers report that they are spending more time in preparation for their telepresence teaching sessions, which seems to be having an effect upon the overall quality of teaching. It has also been interesting to note, based upon observational analysis, that the type and quality of interaction in the Pentalfa project is no different than in the typical face-to-face seminars organised for medical specialists in the region. An analysis of exam results in the Polimi demonstrators will reveal further the effect of such classrooms on student's performance in examinations.

There is an obvious need for training and it is also clear that a number of issues exist with regard to the provision of such training. The question exists as to the extent to which those setting up and providing interactive telepresence teaching services should expect, plan and train for an overall change in approach to teaching. It is clear from some of the demonstration activities that have already taken place that many users expect the interactive teaching session to remain essentially the same as the traditional teaching session, i.e., to take the same pedagogical approach. In this case, there can be clear and expressed resistance to a more in-depth training approach which asks teachers and users to re-examine their methodology in line with the challenges and opportunities presented by telematics supported learning methodologies like telepresence teaching. The BIC partners take a non-confrontational approach and generally meet the needs for training as expressed by the teachers and users themselves while at the same time encouraging users to adapt their methodology to take into account the limitations of the technology and, in many cases, to take a more learner-led approach.

Conclusions

The Blueprint for Interactive Classrooms project clearly proves the advantages for universities of working together on a clearly defined objective within a given time frame. The project has produced useful and acceptable tools and outcomes which can be used by schools, universities and learning institutions in setting up and using their own interactive classrooms. In an educational world focused upon the advantages and opportunities of asynchronous learning tools based upon an increasing use of information and communication technology, it is important to explore systems and technologies that facilitate synchronous interactive teaching as part of an overall media mix.

Contact

For further information about the BIC project, check the following web site:
http://www.linov.kuleuven.ac.be/BIC
or E-mail to BIC@linov.kuleuven.ac.be

Biographical Sketch

Sally Reynolds: With a background in educational broadcasting in Ireland, Sally Reynolds has worked for many years in the field of telematics supported learning in Ireland, Germany, The Netherlands & Belgium. She has first hand experience with many of the leading networks in the field in Europe & has worked as a project manager, producer & co-ordinator of various events, projects and initiatives. This includes a number of projects under the 4th Framework Telematics Applications Programme: Education and Training Sector.She is currently working as project manager with responsibility for telepresence projects within the audiovisual centre of the

Katholieke Universiteit Leuven, Belgium and is one of the directors of ATiT & Associates, an audiovisual production and consultancy company specialising in the cultural and telematics supported learning field in Belgium.

Address: Audiovisuele Dienst
K. U. Leuven
Steengroevenlaan 3 b 3
3001 Heverlee
Belgium
E-mail: sally.reynolds@linov.kuleuven.ac.be
Phone: +32 16 32 9250
Fax: +32 16 32 9298

Successful Student Assessment Strategies for On-line and Web-based Courses

Mitchell J. Robertson, Ph.D., Assistant Professor of Chemistry
Department of Chemistry and Physics
Southeastern Louisiana University

Introduction

On-line and web-based courses are becoming increasingly popular in academia and industry. In these courses, students often attend class independently from their home or office. One point of contention involving these types of classes is how to evaluate student progress in the course and assign a grade in a fair and equitable manner so that the on-line and web-based courses are not mistakenly perceived as being easier or more difficult than traditional classes. Another point of contention involving these types of classes is how to encourage and ensure academic honesty in completion of class assignments, synchronous class exercises, and exams.

A synchronous on-line consumer chemistry course and an asynchronous web-based Earth Science course have been developed and taught in the Department of Chemistry and Physics at Southeastern Louisiana University. Both of these courses are service courses involving non-major students with varied backgrounds. Each course utilizes various student assessment strategies that are designed to contribute to student learning and maintain academic integrity, while not requiring undo labor for the instructor. The on-line chemistry course incorporates frequent synchronous exercises for formative assessment and instant feedback for the student and instructor. The course also includes web-based exercises that can be individually tailored for each student, listserve participation, and a modified version of conventional exams for summative assessment. The Earth Science course uses various Internet assignments, many involving student writing, as well as customary evaluation methods. Although the method of assessing student progress in these classes is different than for traditional lecture courses, the assessment strategies demonstrate that academic honesty and rigor are maintained in these classes.

Designing Student Assessment Strategies

The instructor's assessment of individual student progress in a course is likely the most important part of the course from the students' perspective. Examples of student assessment by the instructor can include tasks such as giving a pass/fail grade on a simple 5-minute quiz, critiquing a 10-page paper, evaluating a written problem set or assignment, determining a score on a major exam, or assigning a final course grade. The methods of student assessment in a course can ultimately determine the success of the course, both in terms of student learning and in satisfaction with the course by the students and instructor.

Student assessment strategies for on-line and web-based courses can be considered and derived from the same points used in forming student assessment methods for a traditional class. In their book *Effective Grading : A Tool for Learning and Assessment*, Anderson and Walvoord outline points that are important to consider in designing the student assessment scheme for a course. Many of these points have increased relevance for on-line and web-based courses, where selection of course content and the potential workload for the instructor often have increased emphasis. Some of the important points are:

1. Consider what you want your students to learn. In distance education courses, content is often reduced to a bare minimum due to constraints of delivery and lack of face-to-face interaction. By identifying what you want your students to learn, you are defining the content that you want to teach in the course, and you will be able to better develop student assessment tools to appropriately evaluate this content.

2. Select assessment methods that not only test learning, but teach as well. Assessment can be more than simply asking students questions and then grading their answers. Certainly, traditional exams can be used to determine competency in a subject area, but other assessment methods that guide student learning can also be used. Assignments that utilize various sites on the Internet are naturally suited for on-line and web-based courses. In some courses, compilation of a portfolio of work, where progress can be evaluated by both the instructor and student, is appropriate. Of course, there are many other options.

3. Ensure that the assessment activities fit the learning goals of the course and are feasible in terms of workload. Assessment activities should not be extraneous. They should complement the learning objectives for the course and reinforce the content that has been identified. However, careful consideration must be given to how the students complete the activity, how the students submit the activity, and how the instructor will evaluate the activity. For example, the benefits of an activity are lost if a student must spend an inordinate amount of time searching for obscure information or formatting an assignment to special technical specifications in order to submit it electronically. Similarly, an instructor can be overwhelmed by the time it takes to grade an assignment or exam that contains non-essential student work.

4. Construct a course outline to give order to the assessment activities. A schedule of the assessment activities can allow an on-line or web-based course to progress smoothly. Students will know what to expect and will understand how their performance in the course will be evaluated. Also, the instructor will have a standard by which to organize the course content and to manage the time devoted to the course.

5. Give students explicit directions about each assessment activity. This point is particularly important for on-line and web-based assignments. One example is in designing assignments. Instructing students to "search the web" for certain information can be an important learning activity in some cases, but in other cases it can cause confusion and frustration. In these cases, it may be acceptable to precisely identify the URL's for the sites that are needed to complete the assignment. Another example involves how the students submit the activity to the instructor. Clear and concise directions on how to submit an assignment or exam, especially if it is done electronically, will make the submitted material uniform and easier for the instructor to grade.

Examples

Chemistry 106 (Chemistry for the Consumer)

The course. Chemistry 106, Chemistry for the Consumer, is a survey course in the technical, cultural, and applied aspects of chemistry in society. Students majoring in the Colleges of Business, Education, and the humanities portion of the College of Arts and Sciences typically enroll in the course. The course was transformed from a traditional lecture course into an on-line course as part of a distance education initiative. Lectures in the on-line course are delivered synchronously using an Internet classroom provided by V.O.I.C.E. Technologies. E-mail and the World Wide Web are also integral parts of the class. The class meets on-line for approximately three hours one night each week during a regular semester.

Student assessment methods. Students are assigned course grades based on successful completion of 10 assignments, listserve and class participation, a mid-term exam, and a final exam.

The assignments account for 25% of the course grade. The assignments are posted on the web at the appropriate times during the semester for the students to access. The students typically have one week to complete the assignments and submit them to the instructor via e-mail using a standard protocol. These assignments contain questions and problems typical for any consumer chemistry course, but they also contain exercises utilizing specific sites offered on the World Wide Web. The web sites used for the exercises are provided at a level that is appropriate for the students in the class.

One unique aspect of the web portions of the assignments is that these portions can easily be tailored to an individual student. Thus, each student's work must be unique and cannot be copied from another student. For example, each student is given the name of a different element at the beginning of the semester, and this element name is used in several assignments. As part of the first assignment, the students are required to go to a listed web site to discover the history of this element and identify the physical properties of this element. Since this information is well known to the instructor, the activity is easy to grade. Another example uses information that is compiled by the students. As part of an assignment, each student is asked to list the ingredients from a bottle of shampoo. The results from all the students are then compiled via an e-mail protocol and returned to the students. The students are then asked to pick an ingredient in their shampoo that appears in others and then find information on the Internet about that ingredient. Again, the assignment is unique enough for each student so that there is little chance for a lapse in academic honesty, and the information can be evaluated easily by the instructor. In both of these examples, the assignments help to fulfill and reinforce specific learning objectives for the course.

Listserve and class participation account for 15% of the course grade. Each student is part of a listserve for the class. The students, using a given format, are required to ask a question each week and answer another student's question each week. Class participation is based on completion of short electronic quizzes administered each week. The quizzes are administered several time during a lecture to provide a change of pace and are instantaneously graded and returned to the students for reflection. Although the scores are not used in determining the students' grades, the quizzes provide for immediate reinforcement and informal yet valuable assessment of the material that is presented.

The mid-term exam and final exam account for 60% of the course grade. The exams are traditional written exams utilizing several types of evaluation methods. The students must appear in person on campus or at an approved proctoring site to take the exams. Proctoring agreements were already in place for other distance education courses, like telecourses. The exams can be delivered to the proctoring site, or they can be posted on the web at the appropriate time and then retrieved by the student or proctor. Since the students will not have had any exposure to the written exam format, a short "preview" of the exams is posted on the web so that the students can be familiar with the format.

ESLB 103, Earth Science Laboratory I

The course. Earth Science Laboratory I is a course that accompanies the Earth Science I lecture class. These courses examine Earth/space relationships, solar and stellar systems, and astronomy. All students majoring in secondary science education are required to take to course. In addition, the course is open to all other students, many of whom elect to take the course to help fulfill the general education requirements in science. Web-based exercise were introduced into the course as part of an interdisciplinary grant from the Louisiana Collaborative for Excellence in the Preparation of Teachers. A special 3-week session of the course specifically for education majors was offered during an interim period. The class met daily and involved group exercises, several field experiences, and inquiry-based learning.

Student assessment methods. Students were assigned course grades based on a portfolio, a mid-term exam, and a final exam. The mid-term and final exams were traditional, utilized several evaluation methods, and were administered in class.

A portfolio was used for this class due to the composition of the students and the compact time frame for the course. Detailed instructions on the composition of the portfolio were discussed by the students and instructor and identified during the first class meeting. The portfolios were collected and graded only once at the close of the class; however, they were informally reviewed by the instructor on many occasions. The portfolio consisted of web-based assignments, some traditional assignments, results from group activities, and journal entries. Many of the web-based assignments were designed so that each student would retrieve and report different information. The assignments were completed independently or in a group at the students' own pace. For example, each student could be assigned a distinct geographic location. Based on this location, the student could access an appropriate web site and determine the appearance of the night sky at a certain time of year. Each student's data would then be compiled to create a map and evaluate perspective based on geographic location. In this assignment, each student's contribution is different, but the overall outcome would be the same. Since each student would record his or her own observations, the results would be unique for each student.

References

Anderson, V. J., & Walvoord, B. E. F. (1998). *Effective grading: A tool for learning and assessment*. San Francisco: Jossey-Bass.

VOICE Technologies, 680 Craig Rd. Ste. 307, Creve Couer, MO 63141. Available: http://www.voice-tech.com

Biographical Sketch

Mitchell J. Robertson is an Assistant Professor of Chemistry at Southeastern Louisiana University. He holds a Ph.D. in Inorganic Chemistry from Iowa State University and has twice served as a Summer Faculty Research Fellow at NASA's John C. Stennis Space Center. He has been a trailblazer at Southeastern by developing and delivering the university's first synchronous on-line course, being one of only two faculty members to deliver a 100% on-line course, and being the only faculty member to deliver two different on-line courses. He has presented information about his on-line courses in the Chemical Education Division at the 215th and 217h American Chemical Society National Meetings.

Address: Department of Chemistry and Physics
SLU Box 10878
Hammond, LA 70402
E-mail: mrobertson@selu.edu
URL: www.chem.selu.edu/mitch/mitch.htm
Phone: (504) 549-2159
Fax: (504) 549-5126

On-Line Training Development the First Year

Lorri Rosenfeldt, Curriculum Developer
BOCA International

Tools for Success

Pioneering. For those of us fortunate enough to be involved in the most revolutionary educational advancement since the inception of programmed learning, the role of pioneer is ours. From the advancement of theory through the transfer of knowledge, the decisions we make today will begin to set the stage for education in the next millennium. Synchronous, asynchronous, teleconferencing, satellite delivery, real-time streaming audio, full-motion video, and threaded discussions are just some of the applications available that make our endeavor so exciting - and overwhelming. These terms represent technology choices as they stand today, the week or months ahead will bring us additional options that we have not yet begun to consider.

As with any pioneering attempt, it is best to start with the basics. Bringing the right tools, using a map and learning from those that have gone before have long served as a successful model for beginning. This session will provide you with three tools that can serve as a framework for decision-making during the first year of on-line educational development.

Decision Making

To be or not to be - online. That really is the question, and the first place to start. On-line education certainly holds the constructivist promise of student-directed instruction. It also holds the MBA-driven dream of reduced costs. What then, could be more perfect? Nothing, unless your institution or organization is singularly unsuited to the implementation of on-line education.

There are many factors that influence the suitability of an organization to on-line learning. Principle among them are:

- **Geography** - where your audience is located will influence cost-savings related to travel.
- **Type of Training** - The types of skills you are trying to transfer greatly influences the adaptability to the web.
- **Organizational Culture** - How well your organization adapts to change should play a role in your decision.
- **Available Technology** - The hardware and software available to your learner will play a lead role in how you build on-line training.

Using The Quiz (Attachment A) will help you determine whether or not your organization is ready to begin.

So you're ready to begin. But where do you start? It is easy to get caught up in the bells and whistles, glamour and glitz of on-line learning. Before that happens take the time to establish basic standards. Use the Standards Development Checklist (Attachment B) to define your direction. By establishing a mission statement and creating an overall image in the beginning, you will be able to make the decisions regarding bells and whistles as a means to an end, and not as an end themselves.

Now it is time to get serious. As you move from print-based instructional design to on-line course development it is necessary to identify your course development process and its key players. Traditional, long-held assumptions about roles and the order of development steps may not apply in this course development schema. By doing this at the beginning of your course design process you will save duplicated efforts and wasted time. The On-line Course Development Map (Attachment C) is an example of an organizational model for course development. This can be adapted to the specific roles and needs of your team. It is important to note that in this course development model initial beta-testing occurs very early in the process. In today's deadline-based world of instructional design it can be tempting (and sometimes unavoidable) to skip early evaluation steps. In on-line instructional design, skipping initial beta-testing guarantees that you will significantly increase your final course review and revision process. Making sure that your front-end development steps are strictly adhered will provide you with significant cost savings per developed hour of on-line courseware.

Summary

Stick to your plan. Now that you are ready to saddle up the horses, load the wagon and begin the trek to a more effective, anytime, anywhere instructional world it is important to warn against too much veering off your designated course. Creativity and technological advancements are great distractors from realizing your ultimate goal in a timely manner - that of delivering an instructionally sound on-line educational experience with measurable outcomes. As great ideas or new options present themselves during the design of an on-line project, be careful not to stray so far from the original plan that many hours of redesign are required. If you make a plan based on those who have gone before you and incorporate their successes, when it becomes time for you to discover new territory, you will be well prepared.

Biographical Sketch

Lorri Rosenfeldt is a curriculum developer who holds a Master of Science in Education (Instruction Design) from Purdue University and a Bachelor of Arts in Liberal Arts. Her experience includes both print- and web-based training development. She combines a strong instructional design approach with Internet technology to create valid and fun educational experiences.

Address: BOCA International
4051 Flossmoor Road
Country Club Hills, IL 60478-5795
E-mail: lrosenfe@bocai.org
URL: www.uol.com/boca
Phone: (708) 799-2300 Ext 355
Fax: (708) 799-0310

Attachment A

The
Are You Ready to Implement an On-line Training Environment
Quiz

Answer the following questions and total your score to determine your organization's web suitability.

Audience

Points

1. Predominantly, which type of skills are you trying to transfer?

Cognitive	Psychomotor	Affective	☐
5 Points	3 Points	2 Points	

2. Where is your audience located?

International	Nationwide	In-house, one location	☐
5 Points	3 Points	2 Points	

3. How many hours of training is your population expected to complete annually?

30+	20 - 30	1-20	☐
5 Points	3 Points	2 Points	

Organization

4. What is the culture of your organization?

Cutting Edge	Mixed Bag	Conservative	☐
5 Points	3 Points	2 Points	

5. For this project, what is the highest level of consistent support and understanding that you can obtain within your organization.

☐

CEO	Vice President	Middle Manager
5 Points	3 Points	2 Points

Technology

6. What is the average computer configuration available to your audience?

☐

Pentium 200	Pentium 100	IBM 486
5 Points	3 Points	2 Points

7. How will the WBT be delivered?

☐

By an experienced WBT partner	Your excellent in-house IT department?	Your IT department that is new to WBT
5 Points	3 Points	2 Points

Outcome

☐

8. How will the success of your WBT initiative be measured?

Increase in users knowledge, skills and abilities.	Return on Investment	There is no clear-cut measurement
5 Points	3 Points	2 Points

Total Points ☐

How do you rate?

32 - 40 Points - Your chances for success are quite good.

24 - 31 Points - You may wish to further analyze your area of weakness to strengthen your position.

0 - 23 Points - WBT may not be a suitable delivery method for your organization.

Attachment B

Standards Development
Checklist

General

______ Goal/ Mission Statement

______ Image

Campus Level

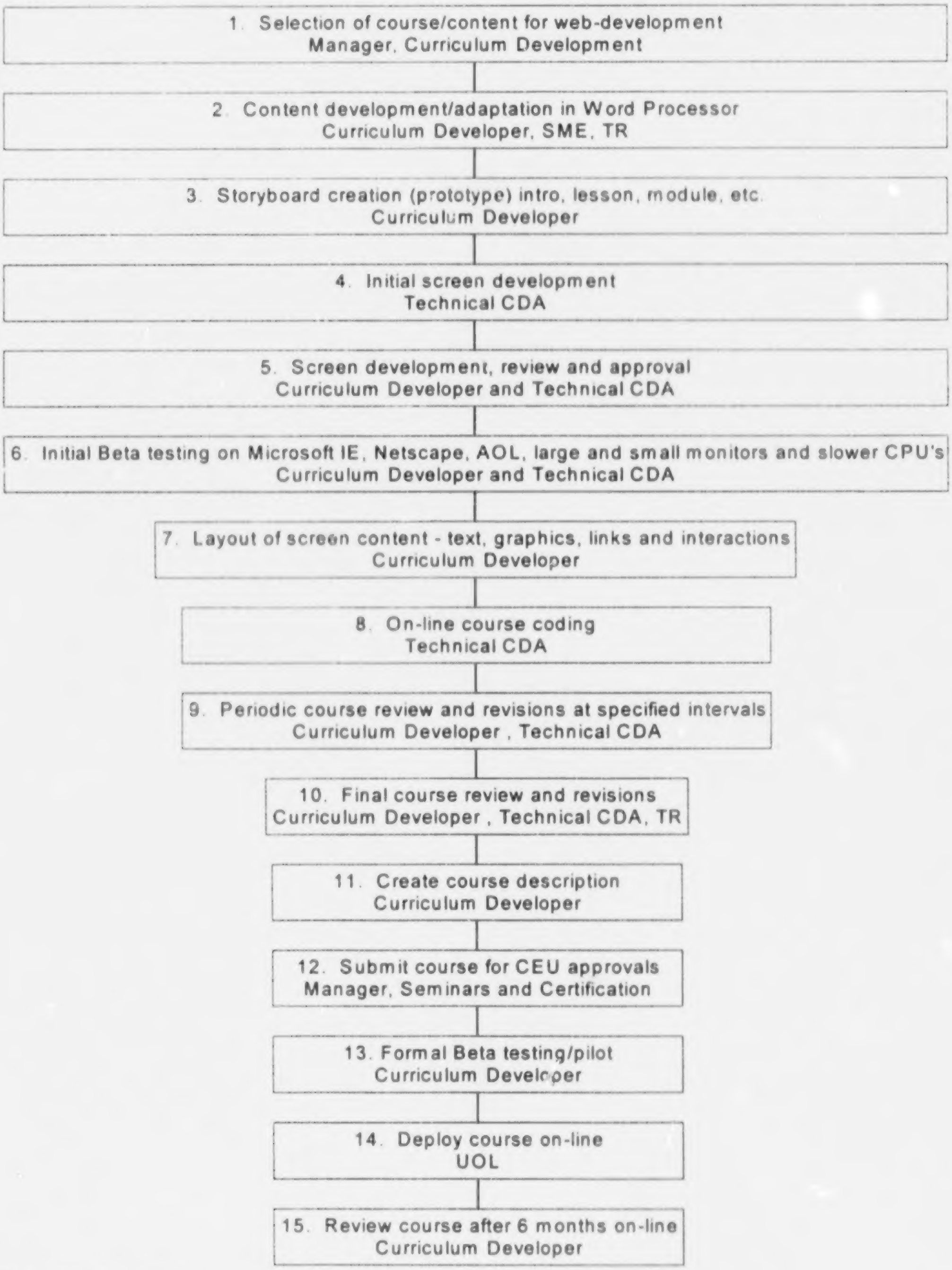
- Color Identity
- Use of Graphics
- User time per screen
- # of Required Screens
- Backgrounds
- Message Design
- Max. Download Time

Course Level

- Color Identity
- Use of Graphics
- User time per screen
- Required Screens
- Level of interactivity
- Level 1 evaluation
- Level 3 evaluation
- Backgrounds
- Message Design
- Max. Download Time
- Screen size & length
- Reinforcing activities
- Level 2 evaluation
- Level 4 evaluation

Attachment C

On-line Course Development Map



1. Selection of course/content for web-development
Manager, Curriculum Development

2. Content development/adaptation in Word Processor
Curriculum Developer, SME, TR

3. Storyboard creation (prototype) intro, lesson, module, etc.
Curriculum Developer

4. Initial screen development
Technical CDA

5. Screen development, review and approval
Curriculum Developer and Technical CDA

6. Initial Beta testing on Microsoft IE, Netscape, AOL, large and small monitors and slower CPU's
Curriculum Developer and Technical CDA

7. Layout of screen content - text, graphics, links and interactions
Curriculum Developer

8. On-line course coding
Technical CDA

9. Periodic course review and revisions at specified intervals
Curriculum Developer , Technical CDA

10. Final course review and revisions
Curriculum Developer , Technical CDA, TR

11. Create course description
Curriculum Developer

12. Submit course for CEU approvals
Manager, Seminars and Certification

13. Formal Beta testing/pilot
Curriculum Developer

14. Deploy course on-line
UOL

15. Review course after 6 months on-line
Curriculum Developer

BEST COPY AVAILABLE

From Lecturer to Distance Education Practitioner: Keeping Careers on Track

Heinz Schenk
Executive Director: Human Resource Management
Technikon Southern Africa

Careers in a Changing Higher Education Environment

The New Nature of Organizational Careers

Profound changes in society, the nature of work and employment relationships together with new conceptions of competitive advantage in a knowledge based economic order are all part of the changing organizational realities that impact on the unfolding of individual careers. The very notion of "organizational careers" is being challenged in the new occupational environment where flatter organizations and a growing contingent workforce offer fewer opportunities for career progression in the conventional sense and for long-term job security (Ball, 1997; Templer & Cawsey, 1999). The classical career planning assumption of a series of matches between individuals and position requirements over a linear career path in a ladder-like progression through the organization no longer holds true. In a work environment where the responsibility for career development is essentially shifted firmly to the individual, new assumptions and approaches are needed from the managerial perspective to ensure sufficient numbers of the right talent at the right time for accomplishing organizational goals. Universities and colleges whose very core business is embedded in knowledge based work will face particular challenges to create development opportunities and interventions that will facilitate the self-management of careers in which the acquisition of new skills and knowledge is a perpetual requirement.

Demand for a New Skill Profile of Academic Faculty

Providers of higher education are facing increasing economic, social and political pressures to deliver research outputs, instructional programs and services that combine the best technology practices with the best teaching and learning practices without compromising accessibility and affordability.

Such pressures are amplified in the contemporary South African context. In the sweeping transformational process of the South African Higher Education system, an increasing emphasis is being placed on distance education and flexible learning as the appropriate approach to address the burgeoning need for access to tertiary education. The challenge facing the tertiary education institutions is not only the provision of sufficient learning opportunities in collaboration with private and public sector partners, but also quality education in terms of national and international standards at a reasonable cost to the learner and the taxpayer. The traditional face-to-face tuition and the correspondence mode as the two predominant approaches in education provision have inherent deficiencies in being able to deal with the national needs for human resource development and the societal needs for access to institutions of higher learning. Residential face-to-face type institutions just do not have the capacity to deal with the needed "massification" of tertiary education, whereas the pure correspondence mode has a limited efficiency in learner throughput.

This can largely be ascribed to a large proportion of South African school leavers, for historical reasons, being ill prepared to enter tertiary education and a predominantly independent learning mode limiting the chances of success even further. A convergence of these two extremes on a continuum of "flexible learning" is strongly advocated and has currently been entrenched in national education policy. Whilst traditionally the overwhelming majority of universities and technikons had based their mode of delivery on face-to-face lecturing, major initiatives in technology based distance tuition are becoming a common feature of higher education providers' strategies.

Such radical change imperatives naturally require the metamorphosis of education providers and the comprehensive re-skilling of faculty towards the acquisition of the competencies and skills in the broad profile of fit-for-purpose distance education practitioners. An equally important thrust has to be the creation of support systems and policy frameworks (including career management and reward structures) that empower staff to achieve and sustain the corporate strategic goals.

A Framework for Understanding and Managing Emerging Faculty Careers

External and Internal Careers

Careers have been studied from a variety of perspectives and have been defined in many ways. A particularly useful distinction, however, is the concept of the external and internal careers (Schein, 1978,1993). The external career refers to the formal stages and roles that are defined by organizational policies and societal concepts of what an individual can expect in the occupational structure. The study of elements of the external career typically focus on how individuals are managed by the employing organization, what is rewarded and valued and what is perceived as determinants of career success in a given institution (Derr & Laurent, 1989). By contrast, the internal career refers to the subjective sense or self-concept of where one is going in one's work life. Schein (1996) asserts that through the longitudinal study of careers it becomes evident that most people form a strong self-concept ("career anchor") which holds the internal career together even as they experience dramatic changes and environmental impacts to their external career.

Career Anchor Theory

Edgar Schein defines a career anchor as the person's self-concept consisting of:

- self-perceived talents and abilities based on actual successes in various work settings,
- self-perceived motives and needs based on self-tests and feedback from others, and
- self-perceived attitudes and values.

Career anchors only evolve through the accumulation of occupational and life experience and once the self-concept has been formed it functions as a source of stability determining all career decisions.

Awareness of one's anchor emerges when one needs to confront the self-image in the face of job shifts through being promoted, fired, redeployed, moved geographically or functionally etc.

Whilst five distinct anchors were originally identified, subsequent research has expanded the categories to the following eight orientations:

- Technical/Functional competence
- General Managerial competence
- Autonomy/Independence
- Security/Stability
- Entrepreneurial Creativity
- Service/Dedication to a Cause
- Pure Challenge
- Lifestyle

Research by Schein and his associates (1990) and others, has typically found a broad distribution of anchors in every occupation even though one might on a theoretical basis expect a particular bias towards a given anchor in particular occupations. Some of the studies that have had some focus on educationalists typically found some grouping towards the technical/functional competence, security, service and autonomy orientations (de Long, 1984; Erwee, 1991; Schenk, 1998).

The Importance of Knowledge of Career Orientations for Organizations

Given that a career anchor indicates an area of such significant importance to a person that he or she will not give it up, it becomes clear that any instance of major organizational change/restructuring/transformation will force an individual confrontation with the self-image and has the potential of a loss of core talent, if the new deployment is not congruent with their career anchors.

In reviewing the literature Yarnall (1998) highlights the following organizational benefits to be derived from understanding career orientations:

- Appropriate tailoring of career interventions;
- Offering opportunities congruent with an individual's orientation;
- Designing appropriate reward and promotion systems;
- Developing targeted recognition systems;
- Increased managerial understanding of what drives internal career satisfaction;
- Understanding the overriding career culture in the organization.

From the perspective of a higher education institution the listed benefits take on an added significance if one considers that many of them appear to be correlates of faculty vitality. Chan and Burton (1995) assert that most of the factors affecting faculty vitality, i.e. sustained productivity in teaching, research and professional services, are traceable to *firstly* the *institutional direction* that sets the expectations for faculty performance and how teaching, research and service are weighed; *secondly*, the *working environment* including factors such as "balanced' workloads, opportunities for career development, initiative and roles in decision making; and *thirdly*, the academic *reward structure* including policies and procedures for compensation and recognition.

Examining the Findings of the Research Project

From a study of a sample of 106 faculty members in 1994 a career orientation profile dominated by Service, Security, Life Style and Autonomy orientations was obtained.
A subsequent replication in 1999 of a slightly larger sample of 117 faculty members yielded a different hierarchy of dominant orientations, i.e. Life Style, Technical/Functional Competence, Service and Autonomy. It needs to be noted that the studies do not constitute longitudinal research since at least 50% of the second sample would comprise new organization entrants since 1994. (There is no tenure system in operation.) Particularly the change in profile regarding the emergence of Technical /Functional Competence as a strong orientation is of interest and can probably be explained by two strategic changes in corporate direction, namely the proliferation of post graduate programs in the range of courses offered and the stronger emphasis being placed on research outputs versus the previously almost exclusive focus on teaching performance.

In designing compensation and reward structures aimed at retaining core talent and being congruent with dominant career orientation profiles, a strong emphasis on flexible work practices, cafeteria style remuneration system, support systems for balancing career and family concerns (e.g. child care) and career development based on self development styled interventions would be indicated for Technikon SA. An illustration of how an understanding of the key drivers of career satisfaction in the organization can almost predict the possible acceptance of or resistance to new corporate strategies is found in the proposed new remuneration system of the institution. Whereas the notion of performance based increments and even a top slicing of annual increases for purposes of rewarding top achievers was greeted with enthusiasm, attempts to reduce the levels of overly generous leave benefits by means of equivalent monetary compensation, have been consistently and vehemently resisted.

Conclusion

Management in higher education institutions will increasingly need to become adept at job/role planning in the current state of dynamic and turbulent unfolding of careers where the derailment from often obscured tracks may hold not only disastrous consequences for the individual but also corporate headaches in attracting, developing and retaining top talent for maintaining a competitive advantage.

The following table presents a synopsis of guidelines for matching individual anchors to managerial practices in an organization (condensed from Schein, 1993).

Table 1. Synopsis of Guidelines

CAREER ANCHOR	PAY & BENEFITS PREFERRED	PROMOTION SYSTEM PREFERRED	TYPE OF RECOGNITION PREFERRED
Technical/ Functional Competence	External equity, i.e. same pay as comparably skilled colleagues in other organizations. Absolute pay more important than bonuses or stock options.	A professional promotional ladder parallel to the managerial ladder. Increase in job scope as desirable as increase in rank.	Recognition from professional peers, more important than praise by an unknowledgeable superior.
General Managerial Competence	Internal equity, i.e., substantially more pay than level below in own organization.	Promotion based on merit, measured performance, and results.	Promotions to higher position of responsibility.
Autonomy/ Independence	Terrified of "golden handcuffs". Merit pay and immediate payoffs, but no compensation or benefits with strings attached.	A new job with even more autonomy, but no rank or responsibility.	Portable recognition. Medals, testimonials, letters of commendation, prizes, and awards are valued more than promotions, title changes, or even financial bonuses.
Security/Stability	Steady pay based on length of service. Prefers benefit packages that emphasize insurance and retirement programs.	Seniority-based promotional system. Welcomes a published pay scale, with defined longevity requirements for raises.	Recognition for loyalty and steady performance.
Entrepreneurial Creativity	Ownership and control is the most important issue. Actually may pay self rather poorly, but wants to own the stock, the patents, etc.	Wants the power and freedom to move into the roles considered key for continued exercise of creativity.	Building fortunes and high-profile recognition, e.g., own name on the product or company named for self.
Service/	Fair pay for contribution and portable benefits because there is no a priori organizational loyalty.	Movement into position with more influence as well as freedom to operate autonomously.	Recognition from peers and superiors and feeling that own values are shared by higher levels of management.
Pure Challenge	Pay is less important than the presence of challenge.	Ever tougher challenges.	Passing self-imposed tests.
Lifestyle Integration	Flexibility of working conditions and options for integrating work into life are more important than amount of pay.	Career advancement that takes into account lifestyle preferences such as unwillingness to relocate geographically.	Understanding and accommodation of lifestyle preferences.

References

Ball, B. (1997). Career management competences – the individual perspective. *Career Development International*, *2*(2),1-6.

Chan, S. S., & Burton, J. (1995). Faculty vitality in the comprehensive university: Changing context and concerns. *Research in Higher Education,36*(2), 219-234.

De Long, T. J. (1984). A comparison of the career orientations of rural and urban educators. *Educational Review*, 36(1), 67-74.

Erwee, R. (1991). Career anchor profiles of a sample of business and professional women. *Journal of Industrial Psychology*, *17*(2),5-12.

Schein, E. H. (1978). *Career dynamics: Matching individual and organizational needs*. Reading, MA.:Addison-Wesley.

Schein, E. H. (1993). *Career anchors: Discovering your real values* (Rev.ed.). San Diego: Pfeiffer.

Schein, E. H. (1996). Career anchors revisited: implications for career development in the 21st century. *Working paper MIT Sloan School of Management*. Available: http://learning.mit.edu/res/wp/html

Schenk, H. (1998). Career orientation profiles of technikon lecturers involved in distance education. *South African Journal for Higher Education*, *12*(1), 161-165.

Templer,A. J., & Cawsey,T. F. (1999). Rethinking career development in an era of portfolio careers. *Career Development International*, *4*(2), 1-7.

Yarnall, J. (1998). Career anchors: Results of an organisational study in the UK. Career *Development International*, *3*(2) 1-6.

Biographical Sketch

Heinz Schenk is the Director of academic programs in Human Resource Management at the Technikon Southern Africa.

Address: Programme Group: Human Resource Management
Technikon Southern Africa
Private Bag X 6
Florida
1709
South Africa
Email: hschenk@tsamail.trsa.ac.za
URL: http://www.trsa.ac.za
Phone: 27 11 471-2291
Fax: 27 11 471-2136

Time Management Goes the Distance

Ken Seemann, Distance Learning Specialist
Corporate Training & Development, MCI WorldCom

A Case Study for Soft-Skills Training Via Interactive Television

Session Overview

What's in it for you? This information session focuses on the design and evaluation of a typical soft-skills training program. You'll see how MCI WorldCom created a time management program for delivery via their interactive television system. You'll see some of the challenges that face instructional designers when they transfer courses to this technology format.

Objectives. The session has three primary objectives.

1. Create a line-of-sight linkage between corporate competency models and training objectives to drive bottom-line business results.
2. Establish a process for creating and implementing a performance evaluation system for soft-skills training when that training is delivered via interactive television/videoconferencing technology.
3. Review a case study on a typical soft-skills training program – Time Management – that implements these processes.

Process. The session begins by showing how course objectives are linked to employee competency models. Various tools for interaction in the interactive television medium are discussed. Evaluation closes the session. Examples from a time management training program are used throughout the various segments of the program.

Validation. In addition to the use of this design process being used successfully in multiple interactive television programs at MCI WorldCom, participants of the time management sessions report an average of more than 2 hours per week saved in their time at the office.

Technology. The session focuses on the effective design and delivery of soft-skills training using a one-way video, two-way audio system. The system uses the OneTouch™ keypad system for participant-to-instructor voice connections as well as multiple choice and numeric questions.

Line-of-Sight Linkages of Competencies to Training Objectives

Competency line-of-sight. Competency models for all levels of the organization are most effective when they show direct linkage between the competency skill sets and the objectives of the organization. Success in this area requires strong efforts to analyze current high performers in the organization and their skill sets. In this way the competencies link to the business capabilities, which link to the business objectives, which produce specific business results.

Defining the competencies. The instructional designer begins the design process by identifying the specific competencies a program will address. Definitions of competencies, the number of competencies, and the time allotted for the training program are examples of questions answered at this stage of the design process.

Defining the skills. Since competencies are typically broad in their definition, the designer can now narrow their focus to the one or two skills that the training program can most effectively deliver new training around. In interactive television, this designer has learned that "less is more." By focusing on just one or two critical skills, the participants get specific tools they can immediately apply to their work environment, without being overpowered by too much information.

Linkages. The designer now establishes linkages between the training objectives and the targeted competencies. With a specific skill identified, a specific performance objective – including specific actions, conditions for performance, and measurement criteria (for success) – are created. The designer should also begin thinking of how follow up on the objectives will be designed into and throughout the class.

Leveraging the Technology

Explain the competencies! Often the work of defining and establishing competency linkages fails to produce results because the designer never tells the participants about this linkage. A designer should ALWAYS emphasize this linkage. Clarity at this point helps the participants see how the skills taught in the class help them succeed in their work and affect the business results of the organization.

Specific objectives. Whenever possible, effective design provides an opportunity to change participants actions back on the job. Effective performance objectives defining the specific action to be taken, the conditions under which it should be performed, and the measurement of success help the participant make concrete use of the skills. And when soft-skills topics defy this type of narrow focus, the designer should look for ways to *create* the focus.

Validate participant experience. Design opportunities into the course that validate participant experience in the topic, especially those that leverage technology. For example, instead of asking participants, "How many of you think you spend too much time at the office?" ask "What is the average number of hours you spend at the office every week?" Note that in the case study presented for time management, the OneTouch™ keypad technology allows this data to be collected and instantly tabulated and displayed on screen to all participants.

Group Exercises. Group exercises work well in the ITV setting just as they do in the live setting. Time Management includes an icebreaker, brainstorming, directed discussion questions, and group exercises that are then called in and reported to all participants. Note that these types of activities are also used in various forms – small groups in each classroom, large groups in each classroom, and "class-wide" groups, where participants call the instructor and the exercise is completed with the entire class.

Solo exercises. Designers can also include individual exercises in an ITV program effectively. Also important is designing group exercises such that individuals can complete them. This is because one of the advantages of ITV is the ability to reach students in remote locations that could not support a live delivery of the program due to the small number of people interested in attending the course at that location. Thus, one person may be working alone in a classroom for the entire class broadcast. Designers must take this into account when creating exercises.

Waiting for responses. The ITV technology allows us to communicate with the remotely located learner, yet it changes the nature of that communication. Responses are commonly slower than the traditional classroom setting. Instructors must learn to wait longer for responses, something that can be uncomfortable while looking at your own image on the television screen. The instructor should take into account that the learner requires time to process a response and then the system time to connect the learner to the instructor. This can be on the scale of 30-50 seconds. Finally, when calls do not immediately come in, the instructor often must wait until those persons who have already called in previously wait to call again, many thinking that they must "give another person a chance to call." This can slow the responses even further.

Questionnaires. Designers and instructors can use individual surveys very effectively. The designer must remember to consider whether knowing an individual answer to every question is important to the success of the survey, or if only the overall score was needed. If the individual questions don't aid in a particular learning point, only summary scores should be used. And when asking follow up questions on the surveys – "Did your score surprise you?" – the instructor should again wait enough time to get a thoughtful response from the participants.

Opinion questions. Asking opinion questions (such as the survey follow up question just described) can give helpful insight to how the learners are processing the information presented. Also, this can overcome some of the anxiety that participants have in calling in – an opinion can never be wrong, so asking these kinds of questions help alleviate some of the fear of technology. In addition, the designer and/or instructor can plan for the most common types of comments and "head them off at the pass." For example, a common comment in time management is, "You've taught me how to select my priorities. That's great. However, I don't have time to work on my priority activities, because I'm too busy with other stuff!" The time management design has this built into the program, along with suggestions of how to address this common concern.

Quiz regularly. Instructors and designers new to ITV often forget that in the traditional classroom we ask questions often. For some reason, we don't think to ask them as often in the ITV format. However, we can and should, because this gives us insight to learning. In addition, the OneTouch™ keypad system allows us to ask multiple choice questions and display the results instantly, something that cannot be easily duplicated in the traditional classroom format.

Commitment = action plans. Designers and instructors often use action plans in traditional classrooms to give participants time to think about application of learning. In ITV, an effective extension of action plans is to provide a specific activity to the participants, complete with follow up action on the part of the trainer, then ask the participants to commit to "trying something new." The commitment is further cemented when the instructor asks the participants to use their keypads to commit to their promise "on the air." Designers and instructors should be cautious not to overuse this keypad commitment.

Assessment. Participants and instructors both commit a great deal of time to classes. Failure to evaluate the usefulness of the time spent in the class leads one to the conclusion that while the learning event was "nice" it wasn't necessarily "needed." Effective evaluations, both in the class and after class, help to assure the success of the class. Time Management is evaluated for reaction of the learners, content recall, application on the job, and results achieved.

Measuring and Reporting Results

Implementation questions. Measuring and reporting results of training helps to prove the effectiveness of the training and the usefulness of the skills back on the job. Issues such as how to collect the data, what tools are in place or can be used, who is responsible for data collection, and how to report the data must be answered.

Tell the trainees. Data collection should not be a hidden message. Tell the trainees that they will evaluate the program, on what levels, and how. This sets the expectation that the data matters and it will be acted upon.

Follow up. Once you have an evaluation strategy in place and have told the trainees of this plan, the instructor should follow through with the plan. Do what you say you intend to do, and measure what you intend to measure. Report the data with your reaction and next steps to its use. In the time management case study, participants reported an average of 2 hours per week in time saved using the new tools.

Summary

Effective design and implementation, with specific objectives, are key to success in using ITV for soft-skills training. Experience has shown that these design formats transfer well to traditional classroom and other technology delivery systems as well. The designer and instructor are most effective when they work toward a single goal – learning.

Biographical Sketch

Ken Seemann specializes in the design, development, and implementation of soft-skills training via distance learning technologies for MCI WorldCom. He has both design and delivery experience with a variety of distance-learning media. His design, in partnership with the FranklinCovey organization, for "The 7 Habits of Highly Effective People" using Interactive Television Technology won the 1998 OneTouch Users Group international award for "Best Soft-Skills Training." His curriculum designs and/or delivery for topics in time management, change management, negotiation, and employee orientation have saved MCI WorldCom more than 1/2 a million dollars in the last 12 months alone. Seemann holds a B.S. in Business Management from LeTourneau University and is currently pursuing a Masters in Educational Technology Leadership from George Washington University via distance learning technology.

Address: MCI WorldCom
1122 Alma Road
Richardson, TX 75081
Attn: Ken Seemann
E-mail: ken.seemann@wcom.com
URL: www.wcom.com
Phone: (972) 729-2131
Fax: (815) 327-2745

Developing Computer-Based Training Modules to Combine with Teleseminar and Inresident Phases to Enhance a Traditionally Inresident Education Program

CMSgt Jenny Smith
Chief, Training and Education Development
Air National Guard I.G. Brown Training and Education Center

Mr. Charles Fleming
Director of Curriculum Development
Air National Guard I.G. Brown Training and Education Center

While many computer-based training (CBT) programs are developed as stand alone modules of training, our Education Center needed a method to decrease time required to complete an education program that was delivered using a combination of teleseminar and inresident phases for 4 ½ months. CBT was a viable methodology that would allow students to complete portions of their training asynchronously, thereby shortening the time for synchronous training.

The I.G. Brown Air National Guard Training and Education Center, McGhee Tyson Air National Guard Base Knoxville, Tennessee, has produced satellite-delivered training for the Satellite Noncommissioned Officer Academy (NCOA) program for almost 5 years. In 1998, the Center's Training and Education Development Branch was tasked to convert six lessons taught by the Satellite NCOA into CBT modules. These six lessons would replace lessons that were delivered through teleseminar broadcasts, using 2-way audio and 1-way video.
This discussion will provide a brief background of the Satellite NCOA and then explain why certain lessons were chosen for CBT, the CBT development process, the instructor and student feedback process, and the numerous lessons learned that are unique to developing computer-based training programs.

Background

In 1994, the Air National Guard began offering the Satellite Noncommissioned Officer Academy, a distributive learning version of the Air Force's 6-week Noncommissioned Officer Academy. The distributive learning version of the NCOA included a 4-½ month satellite-delivered phase and a 2-week inresident phase. In the distributive learning phase, students attended classes two nights a week for four hours each night. The evening classes were taught via satellite from the Training and Education Center's television studio in Knoxville. The lessons were delivered using 2-way audio and 1-way video to students at Air National Guard units across the United States. A typical class included anywhere from 4 to 12 sites with each site having 8 to 15 students. At the end of the distributive learning phase, the students attended two weeks of inresident classes at the Air National Guard NCOA at McGhee Tyson ANGB to complete their training.

Choosing Lessons for Conversion to CBT

To shorten the lengthy 4-½ month distributive learning, evening class phase, six lessons were selected for conversion to CBT. The NCOA curriculum is divided into three areas: Communication, Supervision and Profession of Arms. The Profession of Arms series includes lessons relating specifically to a career in the military, such as how to wear your uniform, military history, fitness and stress management. The Profession of Arms lessons were all knowledge-level lessons that were not tested cognitively, but contained affective survey items to determine if the lessons fostered valuing various aspects of a military lifestyle.

The lessons selected for CBT development were chosen based on the lesson's level of learning, both at the knowledge and affective levels. It was decided that lessons written to the comprehension and application level of learning were more suited at that point for teleseminar or classroom delivery. The lessons selected for CBT development included Wear of the Uniform, Air Force History, Wellness, Stress Management, The NCO and the Air Force Mission, and Air Force Culture. Converting these lessons to CBT allowed the distributive learning phase to be shortened to three months followed by the two-week inresident phase. The three-month time frame more closely resembled a college semester environment.

CBT Development Process

Each lesson was assigned a course developer to convert the lesson written for classroom delivery to a CBT module. The course developer worked closely with a subject matter expert from the Satellite NCOA teaching staff. The course developers used Designer's Edge to storyboard the project and Quest to author the CBT.

Although the developers were converting existing course material rather than developing new courseware they still employed techniques from the instructional systems design (ISD) process to ensure learning could occur. All of the developers were at one time classroom instructors and understood the relationship between instructional design and student learning. The importance of instructional design can be found throughout research on distributive learning. For example, Farr and Shaeffer (1993) state that curriculum issues are more important than the technology that delivers the lesson. Our staff agreed strongly with Rossett and Bassett (1997) who stated that turning out a slick multimedia training program using the latest technology won't teach anybody anything if you've ignored basic instructional design.

While instructional design was important, creativity was paramount in the development process to ensure that the CBT lessons did not become "glorified page turners." Also, because the primary lesson objectives were for the affective domain of learning, the CBTs had to "grab" the learner and evoke some type of emotional response. The developers included a variety of graphics, visuals, sounds, and interactivity to address various learner needs. To aid in reaching the affective level of learning, the developers included music and photos that would appeal to student emotions. Another reason for the emotional appeal was the fact that much of the material is a review for Air Force members, who've received similar information at other Air Force schools. Each of the lessons included interactive sessions where the student had to complete a task or a game as part of the module. For example, in the Wear of the Uniform lesson, students had to correctly build a military ribbon bar and also correctly "dress" a male and female model with uniform items such as hat, nametag, ribbons, etc. If the student did not successfully complete the tasks, he or she was sent back through the training. In the Stress Management lesson, the students were able to take a stress test and then receive feedback based on their particular stress level.

Throughout the entire development process, the developers continued to work with the Satellite NCOA instructors. Once a module was completed, it was demonstrated to several members of the Education Center staff, including instructors and non-instructors, for feedback. The staff members were allowed to go through the CBT as a student would, so that any problems or issues could be discovered prior to release. Changes were then made, based on feedback, before the CBT was released for use with the students. Once the CBT was finalized, the completed program was used with one Satellite NCOA class. In this class, each student was issued two CD-ROMs that contained the six lessons. The students were instructed to complete the CBT training on their own time within the 3-month distributive learning phase. Students had to complete all six lessons prior to starting their 2-week, inresident phase.

Feedback Process

Feedback mechanisms were devised to allow Satellite NCOA students, site facilitators, and instructors to provide feedback on the educational effectiveness, visual and auditory interest, and operability of the computer-based training modules. The feedback mechanisms consisted of call in reports, a faxable form, a survey built into each training module that wrote responses to a floppy diskette for later analysis and surveying the students during the 2-week inresident portion of the course. The feedback was tracked electronically to identify trends and edits were made to the programs accordingly when appropriate and/or necessary.

Once the feedback from all available sources was compiled, it was easy to discern which areas required operational improvement from those areas being critiqued based on individual operational preferences and individual preferences in aesthetics. The overwhelming positive feedback from all sources, however, was: 1) the student desires full navigational control and the ability to skip information, 2) the student appreciates being an active participant in the learning process through interactivity, and 3) the student enjoys having all senses involved in the learning process through visuals, sounds, and activities.

Lessons Learned

During the development, beta testing, release, implementation, and feedback phases of this project, the development staff learned many lessons. The developers were all seasoned instructors who were in the early stages of CBT programming. All possessed a strong comfort level with computers, which lowered their learning curve for CBT development. However, learning any CBT authoring system takes time and patience – for the developer, program manager and customer.

In the actual programming stages of development many lessons were learned relating to the authoring system. For example, the construction and file formats of the objects used in a frame and the order they are placed in the object list can have a direct impact on the operability of the frame. Also, care must be taken when programming several simultaneous events to insure proper operability. In the release and testing phase, it was learned that an extremely methodical process for releasing and preparing the program for burn to the CD greatly increased the probability for creating an operable beta.

Completing a beta test cannot be stressed enough. The completed CBT must be tested on several different PC configurations to ensure consistent operability. In the implementation phase, it was learned that directions for running/loading the program simply are not enough. Safeguards must be built into the training programs to ensure the student complies with required configuration instructions. During the feedback phase, it was learned that even if something is reported consistently, it does not necessarily dictate a need to change the programming of the training program.

Although the addition of CBT modules to the Satellite NCOA was successful, an additional problem arose after full implementation. The Air Force controls and develops all curricula for the NCOA. When CBT development initially began, curriculum changes occurred in two-year increments. That meant that a completed CBT would most likely be used and not updated or changed for two years. However, once the CBTs were completed, the Air Force changed its curriculum rewrite policy so that there is a strong possibility that the lessons developed in CBT would change more often. In fact, several lessons have already been changed dramatically, creating the need for a new CBT. It is not recommended that CBT be used in an environment with constantly changing material. Constant change in the CBT arena is not cost effective; therefore the lessons should be converted back to classroom or teleseminar delivery.

Summary

The Air National Guard continues to successfully develop CBT programs. Through our work with the Satellite NCOA, we've learned that successful distributive learning programs may include a combination of methodologies that can range from interactive TV to CBT to traditional classroom training. The key is to remain focused on the learning objective – to translate what we know about adult learning theories into the methodology best suited to deliver the required education and training.

References

Barnett, J., & Rossett, A. (1997). Designing Under the Influence. *The CBT Survival Guide*. Minneapolis, MN: Lakewood Books.

Farr, C. W., & Shaeffer, J. M. (1993, July). Matching media, methods, and objectives in distance education. *Educational Technology*, pp. 52-55.

Biographical Sketches

CMSgt Jenny Smith is Chief of the Training and Education Development Branch, I. G. Brown Air National Guard Training and Education Center, McGhee Tyson Air National Guard Base, Tennessee. She directs curriculum development for Air Force and Air National Guard training programs, focusing on advanced distributive learning technologies including computer-based and satellite-delivered training. Chief Smith has been involved in teaching and education for mor than 10 years. She has been involved with distributive learning for almost five years, serving on the team that initiated the first distributive learning program in the Air National Guard.

Address: ANG TEC/CCT
400 Murphy St.
McGhee Tyson ANGB, TN 37777-6216
E-mail: jenny.smith@angtec.ang.af.mil
Phone: (423) 985-3550
Fax: (423) 985-3556

Mr. Charles Fleming is Director of Curriculum Development for the Training and Education Development Branch, I. G. Brown Air National Guard Training and Education Center, McGhee Tyson Air National Guard Base, Tennessee. He is responsible for curriculum development projects accepted by the branch, focusing on advanced distributive learning technologies including computer-based and satellite-delivered training. Mr. Fleming has been involved in teaching and developing computer training for 9 years. He conducted the initial research and selected the CBT authoring tool currently used by the Air National Guard for CBT development.

Address: ANG TEC/CCT
400 Murphy St.
McGhee Tyson ANGB, TN 37777-6216
Email: charles.fleming@angtec.ang.af.mil
Phone: (423) 985-3550
Fax: (423) 985-3556

Evaluating On-Line Courses:
Unique Opportunities and Valuable Lessons Learned

P. Sean Smith
Senior Research Associate
Horizon Research, Inc.

Kim Obbink
Director, Burns Telecommunication Center
Montana State University

Introduction

The National Teachers Enhancement Network (NTEN)—developed at Montana State University-Bozeman—has been delivering on-line distance learning graduate courses for secondary science teachers for the past six years. Funded by the National Science Foundation, the project goals include increasing teacher access to quality professional development by exploring distance learning delivery methods, establishing graduate credit courses taught by active research scientists, and providing teachers with increased knowledge in scientific content.

NTEN courses generally last one semester and vary between one and three graduate credits. The courses are designed to be highly interactive, emphasizing discussion among participants and between participants and instructors. Class discussions are almost exclusively asynchronous, but a strict schedule of deadlines and assignments keeps participants at essentially the same point in any given course. All work is done on-line; i.e., students never meet face-to-face.

Horizon Research, Inc. (HRI) has served as the external evaluator for NTEN since the project's first year. The purpose of this paper is to describe how HRI's evaluation has taken advantage of opportunities afforded by the project's on-line nature. Specifically, the paper describes in what ways the on-line nature has affected, (1) how data are collected, (2) how project observations are done, and (3) how data are reported back to the project. The paper also briefly describes how the project directors have used evaluation data.

Evaluating Projects Without On-line Components

HRI evaluates a number of K-12 teacher enhancement projects that have little or no substantive on-line component. Such projects typically employ a workshop format, bringing participants together for training, and then sending them back to implement what they have learned, often with follow-up support. HRI works closely with project directors to design formative and summative evaluation components; summative measures to assess project effectiveness and impact, formative ones to inform the project about needed mid-course corrections. Evaluation resources are divided roughly equally between these two components.

Evaluation data are collected in a number of ways. Typically, project participants complete questionnaires at the beginning of the project, during the project, and at the project's completion. These data provide a comprehensive picture but may not reveal some of the more subtle aspects of a project. Interviews with participants, observations, and document review serve the dual purpose of triangulating findings and revealing project aspects that questionnaires may not. These activities are, however, more resource intensive than questionnaires and are done on a necessarily limited basis.

Despite the effectiveness of this evaluation model, it does have inherent problems. As alluded to above, some of the more revealing evaluation activities—particularly observations—can typically be done only on a limited basis because of the evaluation resources they consume. Observations require travel time, time on site, and analysis time. In a project lasting months or years, the probability of directly observing more than a small fraction of its activities is limited.

A second problem concerns data reporting. In a project like NTEN, which consists of courses being offered on a semester-by-semester basis, it may be difficult to report formative data to the project *during* a course, when it would be most useful; the time required for a data collection and reporting cycle is simply too long. Such data may be helpful for improving future course offerings, but not current ones.

Impact of On-Line Courses on Evaluation

Three factors associated with on-line courses have dramatically changed HRI's approach to data collection (specifically observations and questionnaire administration) and data reporting; they have also largely solved the two problems just described. These factors are:

- virtually all of the project occurs on-line and is accessible to the evaluators;
- each participant has an email account, allowing evaluators to contact each participant electronically; and
- each participant has web access.

Impact on Observations

In on-line courses, the time and distance barriers to observation are largely removed. Evaluators can observe all aspects of the project from their desks, with the exception of private communications among participants and between participants and instructors.. Unlike traditional projects, where events must be observed in real time[1], on-line courses generate a permanent record which the evaluator can access literally at any time. Further, and particularly important from the evaluator's and project's perspective, observation of on-line courses is unobtrusive. For the most part, participants are not aware that an evaluator is "in the room."

All these factors make is possible to observe much more of a project's activities. Particularly in NTEN courses being offered for the first time, HRI makes it a point to observe everything that transpires in the electronic classroom, providing a much more comprehensive view than has been possible in traditional projects.

---

[1] While there is the possibility of recording project events for later observation, such approaches often prove unsatisfactory. Videotaping, for instance, rarely completely captures an event.

Impact on Questionnaire Administration

In traditional projects, HRI typically mails paper-and-pencil questionnaires to participants at the beginning of the project, at least once during the project, and at the project's conclusion. Each questionnaire administration involves follow-up with non-respondents in order to achieve acceptable response rates. A typical administration cycle lasts approximately four weeks, at which point the data have been collected but not entered or analyzed.

In the NTEN evaluation, all questionnaires are administered electronically via the web, which is possible because each participant has web access and an email account.[2] The web questionnaire approach has several advantages. In general, the questionnaires are less time consuming to complete than paper-and-pencil versions (pointing and clicking takes less time than "bubbling in"). The web allows HRI to track participants electronically and customize questionnaires individually, making it possible to ask fewer questions in many instances. For example, demographic items are asked only once, rather than being repeated on each questionnaire.

Electronic administration is much more time efficient. Traditional mail-outs typically consume a day in copying questionnaires and cover letters, generating mailing labels, and assembling questionnaire packets. Electronic questionnaire administration takes as little as 15 minutes and involves only sending an announcement to each course, notifying participants about the questionnaire and providing the URL where they can access it. Additionally, notification is almost immediate[3], compared to traditional mailings can take several days to reach participants. Immediate notification (and immediate return of data once the questionnaire is completed) makes it possible to follow up with non-respondents more extensively and in a shorter time frame. The questionnaire administration cycle is reduced by half, from four weeks to two.[4] The time savings is even greater, however, in that data are already in electronic form and ready to analyze.

A final advantage of electronic administration is the opportunities it affords to customize questionnaires to individual courses. While the majority of questionnaire items are common to all courses, HRI gives course instructors the option of adding items that only their course participants will see. Such customization is possible in traditional questionnaire administration, but it becomes very cumbersome and time consuming with more than a couple of courses.

To summarize, electronic administration is much more efficient and allows for flexibility and customization that simply are not feasible with traditional administration. In addition, HRI has found that response rates are quite similar for both paper-and-pencil and electronic administrations; both average approximately 70 percent.

---

[2] The questionnaire web site is password protected to maintain data integrity.

[3] Most participants log on at least daily.

[4] HRI typically asks participants to respond to a questionnaire within a week of the first notification. Two reminders are sent following the first week.

Impact on Data Reporting

In traditional projects, HRI must wait several weeks between data collection and data reporting because of the time required for collection, data entry, data analysis and report generation. As mentioned above, such a reporting time frame is less than optimal for a project since the data cannot easily be acted on while a course is in progress.

When all data are entered via the web, they reach HRI already in an electronic format, eliminating the need for scanning of machine-readable forms and transcription of open-ended responses. This makes it possible for HRI to report data back to the project typically within two to three weeks of the initial questionnaire notification to participants. Such rapid turn around is especially important at pre-course (to inform the project about the kinds of participants in courses and their expectations) and at mid-course (to inform the project about courses that may need intervention by project directors). All reports are generated and "sent" to the project via the web, again making for immediate delivery. The reports are generated automatically when the project directors log on to the web site, again saving time.

Use of web reporting has also made it possible for HRI to be more responsive to course instructors. Each instructor is assigned a username and password, which s/he uses to access his or her individual course data in aggregate form; i.e., they do not see individual participants' responses. The reports provide information about participant expectations, level of comfort with course content, and demographic characteristics. At mid-course, they provide crucial information about participants' perceptions of strong and weak course aspects. The project directors are able to see data from all courses.

Project Use of Evaluation Data

As mentioned above, on-line courses have made it possible to provide the project with much more timely information. Since the beginning of NTEN, project directors and evaluators have worked closely to insure that the evaluation provides information that is useful to the directors. The directors view evaluation data as something that can be helpful to them *during* the project, not just at the project's end when judging success. The directors have made both short- and long-term use of the data.

In the short term, directors have on occasion used data to intervene mid-way through a course. This is a particularly sensitive situation, as it has implications for instructors' autonomy. However, in very rare instances, instructors struggle in the on-line medium to the extent that mid-course intervention is necessary to insure a quality experience for participants and to protect the reputation of the project. Rapid turn around of mid-course data makes such intervention possible.

In the long-term, project directors have used evaluation data to design more proactive interventions. For example, the project has now held three day-long instructor workshops, the content of which has been determined in part by evaluation data. These interventions have the potential to head off problems before they begin. HRI is convinced that the on-line medium makes possible a more thorough evaluation than traditional projects, which yields better information for the directors to use in their decision making.

Summary

This paper argues that on-line projects provide opportunities to accomplish more with evaluation resources than is possible in more traditional projects. In concluding, it should be pointed out that the on-line medium does *not* suggest a different philosophy of or approach to evaluation. It is our belief that any good evaluation—for an on-line project or a more traditional one—must be firmly grounded in strong collaboration between project directors and evaluators and in a strong emphasis on formative evaluation to inform mid-project corrections. The on-line medium has no implications for this philosophy; rather, the medium makes it more possible to do such evaluations well. In particular, the substantially shortened time frame in data collection and reporting, and the substantially increased opportunity for observation hold potential for more thorough and useful evaluations.

The advantages afforded by the on-line medium also present some ethical dilemmas. Web-based data collection makes possible extensive tracking of project participants, perhaps more than participants imagine. HRI strictly avoids collecting personal information surreptitiously, despite the fact that such information might actually be helpful to the evaluation. One implication of this dilemma is that directors of on-line project and evaluators should have firm agreements about what kind of data will be collected and how data will used and reported. Participants also should know how the data they submit will be used.

The increased opportunity for observation presents another dilemma. When observing face-to-face events, all parties know the evaluators are present. With on-line projects, participants and instructors may not know if the evaluators are present, but they know the evaluators *might* be present at any time. Might this affect project activities; specifically, the interactions between instructors and participants? HRI and NTEN have not studied such impacts, but we think they are worth considering.

Biographical Sketches

Sean Smith currently directs the evaluation for the National Teacher Enhancement Network (NTEN), an NSF-funded teacher enhancement project delivered via the Internet. He also directed the evaluation of Urban PTRA (Physics Teaching Resource Agents), a national-level physics-teacher enhancement project aimed at improving physics and physical science instruction in inner cities. Most recently, he began directing the evaluation of the Virtual Professional Development Schools Consortium, a Technology Innovation Challenge Grant funded by the U.S. Department of Education. He collaborates with others at HRI on the evaluation of a number of other teacher-enhancement projects. Prior to joining HRI, Dr. Smith taught high school chemistry and physics. In addition, he was a member of the Education Studies Department at Berea College, where he taught courses in elementary science methods, instructional uses of the Internet, and the psychological and philosophical foundations of education.

Address: Horizon Research, Inc.
111 Cloister Court, Suite 220
Chapel Hill, NC 27514

E-mail: ssmith@horizon-research.com
URL: http://www.horizon-research.com
Phone: (919) 489-1725
Fax: (919) 493-7589

Kim Obbink is Director of the Burns Telecommunications Center at Montana State University. She has a master's degree in education from Iowa State University and is currently a doctoral candidate in adult and higher education at MSU. Kim has worked in outreach and distance learning at MSU for the past 15 years and has received numerous NSF grants for programs related to science education and telecommunications, including the Young Scholars program and the National Teachers Enhancement Network which delivers online graduate credit courses to science teachers internationally. Other funded projects include a Dept. of Commerce TIIAP grant for networking and multimedia training for tribal college faculty, a NASA grant for the development of K-12 online courses and multimedia materials using NASA data, and a Dept. of Health and Human Services grant for establishing online professional development for emergency medical providers in rural areas. As Director of the Burns Telecommunications Center, Kim is involved with the development of distance learning courses, multi-media materials, faculty training and development at Montana State University.

Address: Montana State University
EPS 128B
Bozeman, MT 59717-3860
E-mail: kobbink@montana.edu
URL: http://btc.montana.edu
Phone: (406) 994-6550

Instructional Design in a Technological World: Fitting Learning Activities Into the Larger Picture

Robin Soine
Associate Director, Instructional Design and Planning
WIDS-Wisconsin Technical College System Foundation, Inc.

Designing quality instruction today is taking on fresh importance as technology creeps, or sometimes sweeps, its way into classrooms around the country. With most of society (teachers, school boards, government, parents, and the workplace) (Oppenheimer, 1997) showing such enthusiasm for using technology in the classroom, it is easy to get caught up in the glamour of designing lessons or learning activities using technology, *just because they involve technology*.

Teachers may rush through or even avoid instructional design, because of the pressure to learn and use new technology. This results in learners *not* clearly knowing what they're going to do, how to go about doing it, or when they'll know they've finished it. In designing and planning instruction, teachers must avoid the temptation to become so engaged in using technology that they neglect to design effective learning activities.

The temptation of technology may also cause teachers to neglect connecting the learning activities to a larger outcome. These outcomes, along with clear performance expectations—stated in advance of instruction—become the backbone of learning in any environment. Well-designed learning activities have meaning for learners and connect them to a larger learning outcome. And finally, well-designed learning activities guide learners to achievement of an outcome, which sets the stage for assessment. Strong instructional design and planning, therefore, becomes the critical piece to a successful learning experience, *especially* in a distance learning environment.

Designing Effective Learning Activities

Learning activities are strategies to help learners master an outcome or group of related outcomes. They direct the learner along a path to achievement of a higher level skill, one that has more than likely been established collaboratively, either through a curriculum committee, the local school district, or in some cases, the state.

Given the increasing use of "computer-mediated instructional materials" (Gifford 1999) one must consider instructional design before using technology to any extent. The need for clear activities is even greater in a location-independent environment, as the student is typically not face-to-face with the instructor or other class members. A clear map is needed to lead the learner to the desired destination: achievement of a major skill or larger outcome. For example, with poorly designed learning activities, students end up finding huge amounts of information electronically, but then aren't directed to evaluate its usefulness or value.

Four major principles govern the design of effective learning activities, according to Neill and Mashburn (Neill and Mashburn 1997).

Ensure Validity and Value

Learning activities should address target outcomes and broad transferable skills like communication, critical thinking, and problem solving. For example, if oral communication is a broad transferable skill to be covered in a course, it can be embedded into the learning activities by building oral presentations into the methods.

Support the Thinking Process

By following brain-based theories on learning when designing activities, teachers support the thinking process. Choosing learner-centered activities, breaking instruction into "chunks", and providing several opportunities for elaborative rehearsal and frequent practice all support the way in which we know how learners learn. These points reflect the work of Dr. Ruth Clark, a well known educational psychologist (Clark).

Accommodate Varied Learning Styles

Not all learners learn the same way. By varying the methods (strategies which cause learning) and media (format that delivers methods) in learning activities, more learner styles can be addressed. Well-written activities progress through all stages of the learning cycle created by Neill: motivation, comprehension, practice, application. Dave Meier, founder of the Center for Accelerated Learning uses a similar cycle of preparation, presentation, practice, and performance (Meier 1999).

Provide Learning Plans

Learning plans help learners navigate through materials. These plans list the larger outcomes, the benchmark skills, the performance standards, and any related core ability. Assessment activities are noted, as well as the list of learning activities. Instructional materials can be attached or linked to a learning plan, but the plan itself is the navigational tool leading to success for learners.

Well thought-out learning activities extend the learner from listener and gatherer to analyst, researcher, collaborator, and synthesizer. They become actively involved in learning and are held accountable for achieving the larger outcome. The teacher becomes an inspiration, mentor, guide, and facilitator. Neill says "careful instructional design, based on what we know about how people learn, provides a map that guides (teachers) and learners toward successful completion of a learning experience" (Neill & Mashburn 1997).

Connecting Learning Activities to Larger Outcomes

Once learning activities are soundly built, how do they relate to the larger outcomes or learning results? It's easy to skip this design question, as students may be motivated simply by the computer itself. This is dangerous, as the computer medium alone does not cause learning. Adela Najarro, a third grade bilingual teacher in San Francisco, is a "believer" that students "do more work for you and do better work with a computer." She says, "Just because it's on a monitor, kids pay more attention. There's this magic to the screen" (Oppenheimer, 1997). This magic could be constructed into a valuable motivational tool, but unless there is up-front organization, clear communication about performance expectations, outcome driven assessment, and imaginative learning strategies, the magic is wasted.

Learning activities must be connected to a larger, higher level skill, observable and measurable, and they must be built into the class design. They follow the assessment design and precede the development of instructional materials (Figure 1).

Hardy agrees that outcomes, or "What you want the students to learn" must come before technology inclusion and the planning for delivery of the course. Technology decisions come *after* decisions about *what* teachers want learners to learn, and why students enroll in a particular course in the first place (Boaz et al. 1999).

Connection Comes From Broadening the Teacher's Role

In connecting teaching to learning, the teacher becomes learning facilitator, life long learning model, guide, designer, and developer of activities that enable learners to learn. Neill and Mashburn say broadening the teacher's role is crucial to the learning process because it "requires that you know about your learners, be an expert in your discipline and skill areas, apply what you know about how people learn, and apply what you know about your discipline or skill areas to the design and implementation of instruction" (Neill and Mashburn 1997).

In designing an online course, these concepts still hold true. In "Online Teaching: Moving From Risk to Challenge" Cini says the "new" role of the online teacher is to:

- design experiences and activities to facilitate student learning
- encourage students to become active learners and constructors of knowledge
- guide the process of learning while encouraging student initiative, and
- teach, as well as learn from, students (Cini & Vilic, 1999)

Connecting Experience and Learning

New brain research adds a new dimension to our knowledge about the learning connection:

> This research provides growing evidence that learning is about making connections—whether the connections are established by firing synapses in the brain, the "ah ha" experience of seeing the connection between two formerly isolated concepts, or the satisfaction of seeing the connection between an abstraction and a 'hands-on' concrete application. (Cross, 1999)

Connection has strong support in research, Cross says, and closely examining these connections is not likely to be just another passing fad. Besides presenting connections in neurological, cognitive, and social terms, Cross goes on to say that connecting between experience and learning is important because it improves learning and performance. Teachers must help learners make the connections that constitute learning.

How specifically are these connections made? It's easy to send a student off on Internet research hunts or collaborative chats. Taking this experience and connecting it with a major skill or outcome specified in the course is done by providing clear navigational tools such as learning plans or course schedules broken down into "chunks" with linked or listed readings and well-designed activities.

Matching Outcomes and Assessment

As mentioned earlier, up-front organization and clear communication about performance expectations and outcome driven assessment are even more important when the learner may not be face-to-face with the teacher, or the learner is working independently within a traditional classroom. Learners want to know up-front what is expected of them and what they must do to succeed in the class. They should never have to ask, "Is this right? Is this good enough? How am I doing?" Designing assessments that state expectations in advance and reliably measure learner performance can become burdensome. The initial time investment of the teacher can greatly impede completion. Designing assessments come right before the design of the learning activities in Neill's Instructional Design Flowchart (Figure 1).

Typically, assessments are designed at the course level, rather than the school or national level, and they take on two levels of purpose. The first involves reporting learning results (accountability assessment) at the *end* of instruction. Examples of these include:

- written/oral tests
- performance tests
- portfolios
- simulations
- projects

These measure larger outcomes and provide credentials for documenting a learner's competence.

The second purpose of assessment involves evaluating the learner's progress toward achieving the instructional outcomes, or in other words, giving feedback to learners (continual improvement assessment) ***when they have an option to do something about it***. This type of assessment also gives teachers feedback on teaching strategies (Neill & Mashburn, 1997). Examples include:

- self-checks
- peer assessments
- guided practice checks
- feedback on drafts
- practice activities

These occur during the course of instruction, and are often used to indicate if learners can perform the lower-level (benchmark) skills that make up an outcome, or to check on how learners are progressing with achievement of the outcome (Neill & Mashburn, 1997).

Assessments can be thought of as indicators or answers to the question, "What will indicate learner success?" Evaluation *must* be linked to the initial course outcomes. They must relate. They must match. Carolyn Jarmon, in "Testing and Assessment at a Distance" (Boaz et al., 1999) outlines basic evaluation questions and categories, and states that an "integral part of the distance learning course development process is the incorporation of measures of success" (Boaz et al. 1999). In sound instructional design, performance assessment is closely tied to the performance standards of each major skill or ability needed to perform a task effectively and efficiently. Performance assessment is the process of determining that learners can perform these skills according to specified performance criteria and conditions. Jarmon parallels Neill's statements about continual improvement assessment when she says, "This evaluation process should be integrated throughout the course, not seen as a single measure at the end" (Boaz et al.). By including multiple methods of evaluation and communication, teachers can identify work that is not consistent with learner work or conversations. The teacher should know that the work belongs to the learner claiming it whether this work is submitted in a 10th grade English class or a graduate class in education.

Assessment Tasks

Cross and Neill both suggest considering several assessment options, including accountability and continual improvement assessments, for each learning outcome. Assessment can be set up as a task—an application of a skill practiced beforehand, one in which the learner has been given timely feedback on prior attempts. According to Neill, assessments should reflect the outcome in six areas. The assessment should:

- squarely match the content
- match the process or product
- match the domain and level of the competency (outcomes may call for higher level domains, such as application, so a multiple choice test will not match)
- be clear on whether or not the learner met all the performance criteria (specifications by which performance of an outcome is evaluated)
- be clear on whether or not the learner met all the performance *conditions* (situation in which performance will be assessed). For example, if learners are asked to critique a role play, but instead critique a video, there is a mismatch in assessment and performance condition.
- engage learners in applying knowledge and skills in the ways they are used in the "real world." Because such skills are transferable, they induce learner motivation.

Punctuating courses with assessments will offer valuable feedback on both affective success (learners' feelings about the experience) and cognitive success (intellectual success, by both teacher and learner).

Assessment in Location-Independent Classes

Success in distance education involves effectively using techniques not typically used in the traditional classroom. Learners use a vast array of resources and may approach activities differently because of the resources available, or unavailable, to them. Frequent assessments give teachers feedback, and the chance to trying something new, if necessary. They become useful to both teachers and learners in this environment.

Examples of assessments for location-independent classes include developing a web page or template, developing a multi-media package, or submitting writing.

In order not to waste the magic referred to in Oppenheimer's article, teachers play a crucial role in guiding learners through the learning and technology maze. Building effective learning activities is just a start. Showing them exactly how they will achieve a larger outcome and having them practice doing it along the way is the next step. And finally, assessing learning based on closely tied performance expectations for each outcome gives the student a fair chance at learning what was intended to be taught.

It is not yet known as to whether the inclusion of technology improves learning. But the work of educational psychologists and researchers such as Ruth Clark, Patricia Cross, and Judy Neill all point in the same direction: give students clear expectations in advance of instruction, learning plans with effective learning activities, and outcome driven assessments. The quality of this design will complement and even outlast any technology.

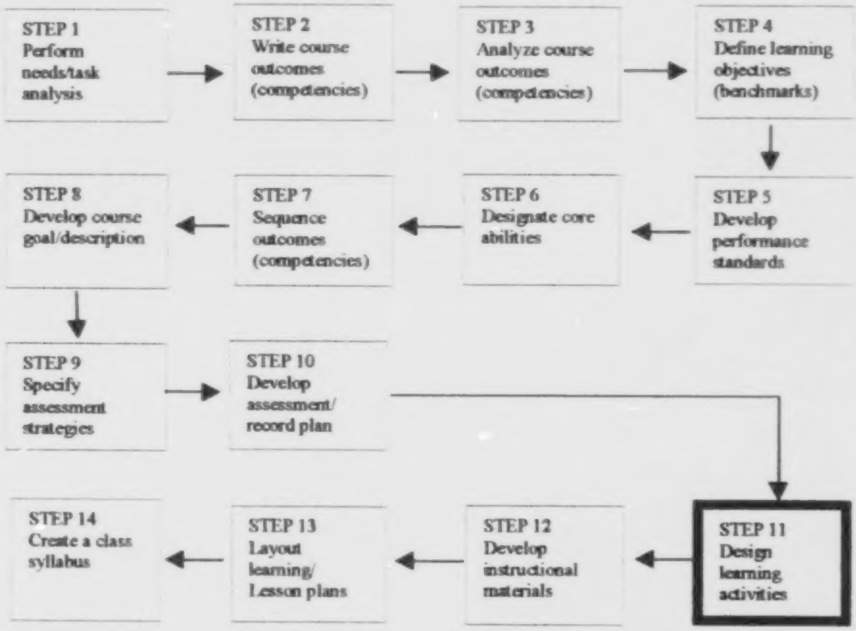

STEP 1 Perform needs/task analysis
STEP 2 Write course outcomes (competencies)
STEP 3 Analyze course outcomes (competencies)
STEP 4 Define learning objectives (benchmarks)
STEP 5 Develop performance standards
STEP 6 Designate core abilities
STEP 7 Sequence outcomes (competencies)
STEP 8 Develop course goal/description
STEP 9 Specify assessment strategies
STEP 10 Develop assessment/ record plan
STEP 11 Design learning activities
STEP 12 Develop instructional materials
STEP 13 Layout learning/ Lesson plans
STEP 14 Create a class syllabus

Figure 1. Instructional Design Flowchart (Neill & Mashburn, 1997)

BEST COPY AVAILABLE

References

Boaz, M., Elliott, B., Foshee, D., Hardy, D., Jarmon, C., & Olcott, Jr., D. (1999). *Teaching at a distance: A handbook for instructors.* Mission Viejo: League for Innovation in the Community College Archipelago.

Cini, M., & Vilic, B. (1999). Online teaching: Moving from risk to challenge. *Syllabus, June,* 38–40.

Clark, R. *Mind tools: How to apply human learning principles to training design.* Center for Performance Technology.

Cross, K. P. (1999). Learning is about making connections. In *The cross papers.* Mission Viejo: League for Innovation in the Community College.

Gifford, B. (1999). *Computer-mediated instruction and learning in higher education: Bridging the gap between promise and practice* [WWW]. North Central Association, 1999 [cited June 25 1999]. Available: http://www.ncacihe.org/conference/99material/gifford.pdf

Meier, D. (1999). Accelerated learning training methods. Lake Geneva: The Center for Accelerated Learning

Neill, J., & Mashburn, D. (1997). *Instructional design and planning study guide.* Waunakee: Wisconsin Technical College System Foundation.

Oppenheimer, T. (1999). *The computer delusion* [WWW]. 1997 [cited June 24 1999]. Available: http://www2. the Atlantic.com/issues/97jul/computer.htm

Biographical Sketch

Robin Soine taught Communication and Writing at Gateway Technical college in Elkhorn, Wisconsin. She used the Wisconsin Instructional Design System (WIDS) extensively as a teacher and provided leadership for performance-based instructional design implementation in her college district. While teaching, she trained other teachers and administrators to use the WIDS model and software and was chair of the Communications Curriculum Committee. She currently talks with educators from around the world about instructional design issues affecting teachers, trainers, administrators, and learners. Recently, Robin has presented at the Universidad de Regiomontaña in México and conferences for the Law Enforcement Training Officers' Association, Careers, the Association for the Supervision of Curriculum Development (ASCD), TechEd, and the Society for Applied Learning Technology (SALT). Over the past few years, Robin has contributed to journals such as the *Vocational Education Journal* (now *Techniques*) and *Technological Horizons in Education* (*THE Journal*). She is editor of WIDSWire. Robin has a B.S. degree in English education, a minor in speech, and an M.A. in English. She is currently working on a Ph.D. in Curriculum and Instruction at the University of Wisconsin–Madison.

Address:	One Foundation Circle Waunakee, WI 53597
E-mail:	rsoine@wtcsf.tec.wi.us
URL:	wids.org
Phone:	(608) 849-2411 or (800) 821-6313
Fax:	(608) 849-2468

So You Want to Provide Library Support for a Distance Education Program? A Blueprint for Getting Started

Susan Sykes Berry, Instructional and Reference Librarian
and
Peggy Mullaly-Quijas, Assistant Director for the Health Sciences Libraries
University of Missouri-Kansas City
Health Sciences Library

Introduction

At times, the library is the last place to know when a college or university is proposing or offering distance education classes. When this situation occurs, the library is placed in the position of scrambling to meet the information needs of the distance education students with little time to plan. Libraries can avoid many of the pitfalls of serving distance education students by utilizing the documents we have prepared at the University of Missouri-Kansas City. The documents are based on the 1998 Association of College and Research Libraries (ACRL) distance education guidelines.

Considerations for Librarians

The first document we produced focused on the issues that our library would need to consider when providing library services to distance users. It covers: same or equal access to materials; special services such as reference or interlibrary loan; separate distance education position or department; additional fees; local library arrangements; financial support; electronic database connectivity; library instruction; and library involvement in planning.

How can the library be involved from the start of planning distance education classes?

"The originating institution recognizes the need for service, management, and technical linkages between the library and other complementary resource bases such as computing facilities, instructional media, and telecommunication centers." (ACRL Guidelines, p. 691)

"The originating institution is responsible for assuming that its distance learning library programs meet or exceed national and regional accreditation standards and professional association standards and guidelines. (ACRL Guidelines, p. 691)

"The originating institution is responsible for involving the library administration and other personnel in the detailed analysis of planning, developing, and adding or changing of the distance learning program from the earliest stages onward." (ACRL Guidelines, p. 691)

A. How can the library obtain information about distance education classes being planned?
B. How can the library obtain information about distance education students?

The document is organized by posing questions to the reader to raise awareness on an issue, stating the ACRL guideline, if applicable, and concluding with leading questions to assist librarians in finding possible local solutions. A sample item is as follows:

Considerations for Faculty

Once we addressed the library considerations, it became clear that the faculty needed to be aware of many of the same issues. The next document became the "Checklist for Faculty and Departments Offering Distance Learning." We began by providing the definition of *distance learning library services* and *distance learning community* from the ACRL guidelines. We then posed a series of questions designed to get the faculty thinking about library services that they normally take for granted. We covered: access to materials; library services; information resources; arrangements with local libraries; and library instruction. See the example below.

Do you expect that students in distance learning classes will require library services? Will they need:

- Reference service?
- Remote access to library databases?
- Interlibrary loan?
- Document delivery of books and articles?
- Instruction in using library and information resources?
- Special arrangements for students to use materials at a local public or academic library? (These agreements are typically made between libraries of the respective institutions and will need to be initiated well in advance of the class being offered.)

At the end of the document, which is only two pages to encourage use, we stated:

> *If you answered "yes" to any of the above questions, the University Libraries would like to be involved from the start of planning your distance learning classes. Interaction is needed at the early stages of course development to ensure that students have access to the information resources they need and the knowledge to locate and make use of those resources.*

Names and phone numbers of people to contact in the library to initiate these services were also provided. It is our hope that the University will approve giving this checklist to all new faculty members and encourage department heads to give it out to current faculty.

Case Study: University of Missouri - Kansas City, University Libraries

Case Study: Recommendations

Once you are made aware of issues related to providing library services to distance education students, you need to address them. Our third document contained our recommendations concerning those identified issues. The document included all the same points the "Considerations for Libraries" document discussed, but in this document, following each issue, was our specific recommendation for how those issues should be addressed at the University of Missouri - Kansas City. A sample item is as follows:

The library needs to be involved from the start of planning distance education classes.

A. The library must have a representative (possibly the Distance Education Librarian) on any University planning committee considering new distance education programs or courses.
B. The library should be supplied with the names, addresses and identification numbers of distance learning students.
C. The Checklist for Faculty and Departments Offering Distance Learning should be provided to Executive Vice Provost, all Deans, and all faculty teaching distance education courses.

Case Study: Plan

Once you have developed recommendations, a plan is required to implement those recommendations. The fourth document we created addressed this. We divided it into five sections. The sections were:

1. Services already available or easily made available now;
2. Services to develop immediately;
3. Services to develop after approval of the plan;
4. Services to arrange as distance education courses are developed; and
5. Services to arrange after student enrollment for distance education courses.

Each of our recommendations was placed in the appropriate section in the "Considerations for Libraries" document. In Section 3, "Services to develop after approval of the plan," was further delineated with a time line. A sample is as follows:

0 - 3 Months:

1. The Distance Education (DE) Librarian search begins immediately upon approval.
2. A toll-free telephone number is installed. It is initially answered in Reference. Later callers will connect with the DE Librarian.

4 - 6 months

1. An office for the DE Librarian is located and properly equipped.
2. DE Librarian arrives.
3. A fax machine is purchased for providing copies of articles and instructional materials.
4. Articles or chapters are made available through email to students and faculty.

7 - 9 months

1. The DE Librarian hires a .5 FTE secretary and 20 hours of student assistants.
2. A chat room is installed for communication between students and the DE Librarian.
3. The DE Librarian revises printed material on services to distance learners.

10 - 12 months

1. The DE Librarian creates a distance education web site to provide library information and instruction, including tutorials and a virtual tour.
2. The DE Librarian evaluates the need for additional equipment, including another scanner for interlibrary Loan, based on usage for distance education students.

The time line for this document helped us see what services needed to be developed before other services could follow. It does not do any good to offer fax services if you have not purchased the fax machine yet!

Case Study: Budget

The final document in the group was the budget plan. This was developed by the Head of Reference Services and the Assistant Director for Public Services. Many budget items are estimates, since no one knows the enrollment figures and usage at this point. However, it was designed to give the Library an estimate of what these services might cost and provide something that the Library Director can use to justify the funds we need to do this service.

All the documents are available by request via email. The budget document will have our cost estimates deleted.

Reference

Association of College and Research Libraries, Distance Learning Section, Guidelines Committee. (1998). ACRL guidelines for distance learning library services: The final version, approved July 1998. *College and Research Libraries News, 59*(9), 689-694.

Autobiographical Sketches

Susan Sykes Berry has been at the University of Missouri-Kansas City since July 1998. She has a B.S. in Nursing from the University of Florida and a Master's in Library and Information Science from the University of Iowa.

Address: Health Sciences Library
University of Missouri-Kansas City
2411 Holmes Street
Kansas City, Missouri 64108-2792
E-mail: sykesberrys@umkc.edu
Phone: (816) 235-1874
Fax: (816) 235-5194

Peggy Mullaly-Quijas has been the Associate Director for Health Sciences Libraries since March of 1998. She received her Master's in Library and Information Science from SUNY at Albany. Peggy earned her Ph.D. in Education from Walden University as a distance education student.

Address: Health Sciences Library
University of Missouri-Kansas City
2411 Holmes Street
Kansas City, Missouri 64108-2792
E-mail: mullaly-quijasm@umkc.edu
Phone: (816) 235-1871
Fax: (816) 235-5194

Developing an Administrative Plan for Delivering Distance Learning Courses and Programs: Process, Pieces and Players

Lew Terpstra, Coordinator of Instructional Technology
Madison Area Technical College

Introduction

Not long ago, most colleges and universities paid scant attention to distance learning. Most activities that could be termed distance learning opportunities, if they existed at all, revolved around a few correspondence courses and telecourses. Distance learning efforts at most institutions were usually limited and somewhat detached from traditional academic classroom activity.

Things have changed. Competition for students, constantly growing and changing adult learning needs, new technologies, and fear of falling behind have sent many institutions into technological and curricular paroxysms attempting to get courses, programs, modules, on line, on video networks, anything, just *get it out there*.

However, in the rush to expand student access to education in new ways and to keep up with other institutions, colleges often overlook a key element in implementing these opportunities. Administrative planning is essential to insure that the operational pieces fit together in a way so that the process is transparent to students and is aligned with institutional standards and expectations. Too often, good intentions in creating distance learning activity at an institution result in a nightmare of legal, academic, fiscal, logistical and union controversies (Gellman-Danley and Fetzner, 1998). This is not to say that distance learning activities must fit into current institutional policies and procedures. Rather, it is important that when considering distance learning initiatives, colleges must fundamentally reexamine policies and procedures that define the business of higher education (Gellman-Danley, 1997).

Policy Issues

The universe of distance learning administrative issues is larger than many new and enthusiastic distance learning advocates may suspect. There are fiscal, technical support, student support, marketing, program/delivery/student assessment, management, training, resource, and development issues that need to be addressed in order to make certain that programs and courses are delivered effectively. To make matters more complicated, these issues often need to be addressed differently for different delivery modes. For example, for interactive television courses, facilities arrangements are an issue at both the delivering and receiving institutions. For programs and courses delivered on the Word Wide Web facilities may not be a significant concern.

The following list of categories and issues related to them is not to meant to be comprehensive but it may provide a starting place to think about what initiating a distance learning program entails.

Fiscal Concerns

Although it seems practical that the institution responsible for developing and delivering a course or program should receive the tuition and FTE's generated by it, this may not always be true. What about courses and programs developed by multiple campuses or institutions? What about courses delivered by 2-way instructional television (ITV)? How will receiving institutions be compensated for facilities and support for a course delivered by another institution? If there is a consortium agreement to share development and delivery of multiple courses and programs how will the programs and courses be allocated? Some will be more desirable than others. What are the incentives for colleges that are net receivers to participate? Should there be a special tuition rate for out of state and country students to make internet courses competitive in the global market? What about fees for renting facilities to outside users? Who is an outside user?

Technical Support

Students want access to Internet courses and programs 24 hours a day, 7 days a week. How will the institution support that level of usage? How will the support be backed up? What are the technical support issues for different software development and delivery tools? How do you choose? If there are multiple campuses or institutions involved, where will the hardware be located and supported? Centrally? What sort of technical standardization should there be among locations? How will all this be funded?

Student Services

Federal regulations governing financial aid make this one of the thorniest problems in distance learning. If a student is enrolled in a program at one institution it is very difficult to obtain federal assistance for courses taken at a distance from other institutions. It is possible to get waivers for individual cases but this is a laborious, one case at a time process. Already overworked financial aid staff often cannot deal with large numbers of students requesting exceptions. Federal officials are aware of the problem and are working on solutions. However, it will probably be another year before there are any major changes.

Other student services issues include provision of guidance and counseling to students at a distance. Also, how will students get academic advising? What about activity fees? Do distant students need to pay them? How do distant students register? How are transcripts marked and sent for distant learners? What accommodations will be provided for disabled distant learners?

Marketing

Will there be a special section in the institutional schedule for distance learning programs and courses? Will there be a separate marketing initiative for distance learning? If there are multiple campuses or institutions involved will the courses and programs be listed in each location's schedule? Different institutions have different deadlines for making course and program offering decisions. How will consortia determine deadlines for confirming course and program information? Will there be a central listing of all the marketing information? Who will maintain this list?

Assessment

Will distance learning courses and programs be assessed differently from other courses and programs? Will courses and delivery modes be evaluated separately? How can quality control for distance learning curriculum be assured? If there are multiple campuses or institutions involved how can assessment be standardized? How can students' work be reliably assessed on the Internet? Will there be testing centers? Proctors? Who will set the standards for them? What are the assessment standards of educational and professional accrediting bodies?

Administration

What will be the enrollment minimum and maximum limits for courses and programs? How will faculty workload and compensation be determined for distance learning courses? Should these issues be standardized for multiple institution consortia? How will instructional materials and assignment logistics, grades, early enrollment information, faculty credentials and other administrative issues be handled among multiple campuses and institutions? How should governance be addressed among multiple institutions? How much centralization should there be? How much standardization should there be in course and program formats? How much flexibility should there be for course start and end dates? (Synchronous and asynchronous courses have different scheduling requirements). What are the roles of deliverers, receivers, students, course developers, faculty, and administrators? How much flexibility should there be in those roles?

Training

How will faculty get the professional development they need to create and deliver distance learning courses? Who will pay? Will there be competency standards for those who wish to be involved in distance learning? Who will write the standards? How will those standards be enforced? If there are multiple institutions involved, will there be standardized training? Who will deliver it and how? Who will pay for it?

Resources

How will distance learning students get access to library materials? To lab experiences? To bookstores? Who will coordinate distribution texts and other course materials? If agreements are made with remote libraries and other institutions, who will negotiate the agreements?

Development

How much standardization should there be for distance learning course development? Pedagogical issues are different for different delivery modes. Who will determine the appropriate pedagogical approach? Should there be standard development tools? Should all institutional Internet courses have the same "look"? Should there be a team approach to course development? If so, who will be the team leader? Who will pay for the (considerable) development costs? How will timelines for development be established and how will they be enforced? How will formative evaluation be done? What policies should be in place for intellectual property and copyright? How will these issues be resolved when development is a multi-institution effort?

Conclusion

The distance learning policy categories and issues described above may be debated, synthesized, revised, redistributed or redeveloped but they should not be ignored. How institutions approach the need for administrative change will vary according to their cultures and their level of involvement in distance learning activities. What is clear is that academic policies and procedures designed in a time previous to today's world of electronic communication need to be seriously revised to take advantage of the powerful tools technology offers. Michael Moore in the American Journal of Distance Education (1994:4) stated that "... the barriers impeding the development of distance education are not technological, nor even pedagogical. We have plenty of technology, and we have a fair knowledge about how to use it. The major problems are associated with the organizational change, change of faculty roles, and change in administrative structures. Here we desperately need all the ideas and all the leadership that can be assembled. The starting point is to expose the problems."

It is every institution's responsibility to begin the task in order to make technology's power work for students.

References

Gellman-Danley, B. (1997). Who sets the standards? Accreditation and distance learning. *New Directions for Community Colleges, 99,* Fall, 73-82.

Gellman-Danley, B. & Fetzner, M.J. (1998). Asking the really tough questions: Policy issues for distance learning. *Journal of Distance Learning Administration. 1*(1). [Online] Available: http://www.westga.edu/~distance/danley11.html

Moore, M.G. (1994). Administrative barriers to adoption of distance education. *The American Journal of Distance Education. 8*(3).

Biographical Sketch

Lew Terpstra is currently Coordinator of Instructional Technology and the Instructional Excellence Initiative at Madison Area Technical College in Madison, Wisconsin. He was the Director of Instructional Technology for the Virginia Community College System from 1993 to 1998. Lew served as the Department Head of Television and Learning Resource Services at Virginia Commonwealth University1988-93, was an Assistant Professor in the Media Arts Department of the University of South Carolina in 1986-87 and was Coordinator for Post-Secondary Education at Iowa Public Television in 1983-84. He also served in various capacities related to instructional design and media production for the University of Iowa in the early 1980's. Lew earned a B.A. in English and Speech Education at Northwestern College (Iowa), an M.A. in literary studies and an Ed.S. in Instructional Design and Technology from the University of Iowa.

Address: Madison Area Technical College
3550 Anderson St.
Madison, WI 53704-2599
E-mail: Lterpstra@madison.tec.wi.us
Phone: (608) 243-4503
Fax: (608) 243-4502

CalStateTEACH:
Building an Industrial-Strength Distance Education Program

Robert Threlkeld[1]
Dean, Learning and Technology
California State University, Fresno

Overview

In May 1998, Charles Reed, Chancellor of the California State University (CSU) asked for and received $5 million to produce a massive distance learning teacher education program—within twelve months. It was to be collaboration between the 22 Cal State campuses and the British Open University (OU), adapting both the OU's curriculum and educational model. On September 6, 1999, the program, now called CalStateTEACH, will open its doors for business.

Background

Like many phenomena, CalStateTEACH emerged from a confluence of coincidences. For several years, the Cal State system had been meeting and planning with key officials from the Open University. Under the aegis of former Vice Chancellor Molly Broad, the CSU and OU had been exchanging visits between teams of academics and administrators. The CSU Institute, the System's entrepreneurial arm, tried diligently to create produce projects that would generate revenues for both institutions. However, without substantial startup capital, nothing significant occurred.

With the arrival of Chancellor Reed in early 1998 things changed. Reed had created a partnership between the OU and the Florida system when he headed that organization. He had a warm professional relationship with Open University Vice Chancellor John Daniel and was anxious to create a similar transatlantic partnership in California.

During this same period, California was experiencing a serious shortage of credentialed teachers, particularly in lower grades. Because of class size reduction, early retirements, and increasing student numbers, the state was short some 30,000 professionally trained teachers.

Because of his interest in ht Open University and the desperate need for teachers, Reed approached California Governor Pete Wilson and legislative leaders with a bold idea: invest $5 million of the development of an-OU style distributed learner program designed to serve large numbers of future teachers. Money was appropriated based on Chancellor Reed's commitment that a program would be up and running within fourteen months.

---

[1] The Author served as CalStateTEACH co-director for technology and support during the project's developmental year, July, 1998 to June, 1999.

The CSU Responds . . . Quickly

Five million dollars and an edict from a new Chancellor got the attention of the system. Campus presidents and senior Chancellor's Office officials moved quickly. By August, a development team was established. Six professionals, mostly from the campuses, were recruited to guide the project over the subsequent twelve months. Divided into curriculum development and technology development, this "core team" managed what proved at times to a sprawling, unruly process.

The project's centerpiece during the development year was the creation of a strong and innovative statewide curriculum. Some three dozen outstanding teacher educators from the twenty-two CSU campuses were recruited to design the program. Many were widely published authors and all were well known by their peers. Working in teams, the faculty integrated subject areas such as math, social studies, reading, science, and technology into a seamless eighteen-month curriculum, including an outcomes-based assessment structure.

The Open University

During the early months, the project was known informally as "The OU Project." That name reflected the presumed strong role of the Open University in development of the curriculum and support processes. The OU has a highly successful Post Graduate Certificate in Education, upon which it was hoped the CSU effort would be modeled. In fact, although the model was adoptable, virtually none of the curriculum was applicable in the California schools. In both Britain and the US, educational content is heavily prescribed. There was little overlap.

The essence of the OU model can summarized in four key points:

- The instruction comes largely from carefully designed materials produced by outstanding academics,
- Students are mentored in small, local groups by tutors (in the case of the California project, called "Learning Support Faculty"),
- Through a system of regional centers, student support mechanisms are given a high priority, and
- Assessment and quality control are clear and consistent processes.

In the author's view, the OU connection never really achieved the level of close collaboration it might have. Aside from occasional visits by key OU staff, and a visit to the OU by CSU staff late the project, there was little actual interaction between educators from both institutions. Although there was formal collaboration, the chance for close cross-fertilization was never realized.

By the fall, the informal OU Project name was dropped and the project had gone through a succession of names, TeacherNet, CSU TeacherNet, and finally, CalStateTEACH (CST).

Technology and Media Choices

Although it utilizes computer communication between students and faculty, the OU's PGCE is not characterized by extensive use of technology. The curriculum is largely print based and all assignments are mailed in. Because of this, the OU utilizes a fleet of vans and large warehouses to transport and store paper materials.

Desiring to minimize technical problems and maximize ease of use, the producers of CST decided to take a conservative approach to technology, as well. Using WebCT as the basic course management system platform, the project produced a rather Spartan web structure. The web will be used for e-mail, conferencing, a calendar, and access to the core documents, The Study Guides. There will be no streaming media and nothing requiring high bandwidths or fast processors.

The OU makes extensive use of video-based instruction. In fact, there is a resident BBC production unit on the OU campus in Milton Keynes. Although CST originally anticipated producing a large number of videotapes, in the end, the project made little use of original video material. Rather, the project purchased existing videotapes from commercial producers, such as Pearson Higher Education and Annenberg/CPB. The quality was high and costs were less than that of creating new material.

The core of what the OU does academically is to produce meticulously reviewed, high quality print materials. The OU is a major publisher of educational products, and often sells its courseware to the UK public through British publishers. CST decided to take another route and chose to work with existing published textbooks rather than developing original content. Some eighteen textbooks are now included in the eighteen-month program.

Politics

CalStateTEACH is the most ambitious distance learning program ever undertaken by the California State University system. The model violates a number of campus traditions:

- A statewide curriculum not developed by individual campuses
- An integrated 39-unit curriculum without individual courses, subjects, and letter grades
- No teaching faculty, per se, rather small groups of students working with mentors
- A statewide program jointly operated by campuses and a central administration

CST was closely scrutinized by various organizations throughout its developmental year. The project had a 24-member advisory committee including an unprecedented seven campus presidents. Behind the scenes there was considerable jockeying for influence in "the Chancellor's project" by these chief executives. The CSU has an active and vigilant statewide faculty senate that was dubious about CST. This senate reviewed various drafts of all the materials and resisted any attempt by the system to view this educational model as anything but a one time, aberration to normal academic processes. The California Commission on Teacher Credentialing carefully reviewed the CST model and materials for quality and adherence to standards.

Because of CST staff's careful diligence to the project's political dimensions, all necessary bodies approved it.

Current Status

CalStateTEACH is ready to go starting September 7, 1999. The CSU has created five regional centers throughout the state, hired regional staff, and created a strong student services structure. By August 1999, a full complement of mentors will have been hired and trained.

The new statewide director is Dr. Jodi Servatius, one of the original core team members involved in designing the program. She is assisted by two otheradministrators, one in charge of curriculum and the other heading student services. The headquarters for the program will by at the CSU Hayward campus, in the San Francisco Bay area.

The curriculum is completed and a large box of 52 items (books, tapes, CDs, and pamphlets) will be mailed to incoming students by late summer. Each item is carefully sequenced within the program's curriculum.

Working closely with large school districts, the program is recruiting newly hired emergency permit teachers and signing them up for CST. As of this writing, a good estimate for initial enrollment is 500-700 students.

And So, What Did We Learn?

1. *Given significant resources and very high level support, it is possible to get a great deal done in a short time.* The California State University, 22 campuses and 350,000 students, is a very large and complex organization, both burdened and blessed by strong traditions. Never in this author's twenty-year experience has such a massive project moved as quickly and successfully. Money and power do have an impact.

2. *To be successful, such a large and visible program needs to be very responsive to the political needs of various constituencies.* Senior CSU staff and core developers spent at least a quarter of their time gaining and maintaining support of stakeholder groups. Five campuses were asked to host regional centers. The decision on the centers was as much a political as a rational process, involving the egos and needs of campus presidents. Also, CST threatened perceived faculty control of the curriculum. It was essential to keep in close contact with faculty leaders.

3. *The jury is still out on CST's long-term success within the CSU.* Clearly, since the program has not begun instruction as of this writing, there are questions about the success or failure of the program itself. Will students show up? Will they stay enrolled? Will the curriculum be effective? In the longer term, another question relates to the viability of a hybrid program that is not firmly attached to a local campus. A decade ago, the CSU terminated a similar centrally designed, locally administered experiment, The Consortium. It failed because of the lack of a constituency. It will be interesting to observe how CST fares in a similar unattached structure. Perhaps times do change.

Biographical Sketch

Dr. Robert Threlkeld has been Dean of Learning and Technology at California State University, Fresno, since 1995. He has been involved in all aspects of distance and distributed learning for more than twenty years. In August 1998, Dr. Threlkeld was asked to co-direct "CalState TEACH," the Cal State's $5 million partnership with the Open University of the UK to produce open supported learning materials for teach education. In addition, he is a Senior Associate for the Western Cooperative of Education Telecommunications. In that role, he is providing advice and leadership in the Management for Distance Education Institutes.

Address: California State University, Fresno
225 E. San Ramon
Fresno, CA 93740
E-mail: bobt@csufresno.edu
Phone: (559) 278-7755
Fax: (559) 278-7026

Enquiring Minds Want to Know: The First Year of an Online High School

Donna Weisman, Regional Coordinator, North
Florida High School, Florida's Online High School

Pam Birtolo, Regional Coordinator, South
Florida High School, Florida's Online High School

The Florida High School is an Internet-based high school serving the students and educators of the state of Florida. The for-credit coursework of the school is based upon Florida's Sunshine State Standards and represents a fundamental change in the educational process. In the 1999-2000 school year, FHS will offer 49 courses, free of charge to students throughout the state of Florida. By the 2000-2001 school year, Florida High School is slated to offer a complete high school curriculum culminating in a high school diploma.

Florida High School began in 1997 as a joint project between two school districts with major funding provided by state dollars. Based on the motto, "any time, any place, any path, any pace," the school delivers asynchronous learning opportunities to students who will face new demands of the 21st century workplace. The Florida High School provides dynamic, interactive, project-based, courses that produce an individualized learning environment designed to meet the diverse needs of today's students.

And diverse they are. The school includes students from high rise apartments in Miami, students who live in small rural areas, some who are hospital-homebound, a few promising future Olympians who must train most of the day, and a quickly growing homeschool population. To be successful, today's cyber school must offer learning opportunities that are engaging and meaningful to a diverse population of students with varied learning styles. With this in mind, courses are built around techniques that promote consistent student-teacher interaction as well as sound principles of instructional design.

Florida High school courses use Gagne's nine events of instruction as building blocks of good instructional design. For example, Event 1 is based on gaining student attention. One trademark of Florida High School courses is the use of interesting, yet purposeful motifs to engage learners. For example, the chemistry course is based on an industrial theme with a nuclear power plant. Likewise, the geometry course utilizes an architecture motif, making important connections to real life situations. All courses go through an extensive peer review process in an effort to ensure that standards are met, a range of perspectives are considered and they lend themselves to a variety of learning styles.

While the feedback from students and educators has been overwhelmingly positive, growing pains occurred, and important lessons were learned along the way. These lessons will continue to provide direction for Florida High School, and we know that enquiring minds want to know the lessons learned in the first year of an online high school.

Lessons Learned

Online Learning Is Not for Everyone

While this may seem obvious, we found many students taking online courses who really didn't enjoy working online or were not comfortable using technology. We have worked hard to identify the qualities needed by students to have a successful online learning experience. These include:

- Self-motivation
- Independent learner
- Computer literate
- Time management
- Effective written communication skills
- Personal commitment

To help students decide if online learning is right for them, Florida High School now includes a self-assessment and a teacher-generated screening phone call as part of the online registration process. We encourage schools that offer our courses during the school day to allow their students to decide if this venue is right for them. Through the screening phone call, we encourage students to take an active role in their learning and look realistically at the environment they are choosing.

Online Learning Is Not for Everyone, Part II

The online educational environment is learning centered. The opportunity for the instructor to be the "sage on the stage" just doesn't exist. A great classroom teacher is not necessarily a great online teacher. In the online classroom, the teacher is the invisible motivator, facilitator and navigator.

For many teachers, the shift from a broadcast model of teaching to a model of interactive learning is threatening. They aren't ready to make the leap.

At the Florida High School, we employ a team approach not only to the hiring process, but also to the adjustment process. All new teachers have peer mentors. Professional development and training is extensive and includes not only learning new technologies but also learning new paradigms.

The Technology Must Be Adequate

Once a student has determined that online learning is a good (suitable) match, the next stumbling block can be the technology itself. The digital divide is real and growing steadily. Seven percent of lower income households have a computer, 32% of those making $30,000 to $50,000 own a computer and 53% of those making over $50,000 have at least one computer in the home. Households earning over $75,000 are ten times more likely to have Internet access than those with incomes below $30,000.[1] When students don't have computer access at home, FHS looks to the local school district to provide access equity.

Sadly enough, we discovered universal access at school is a myth. The 1997 STaR Assessment (School Technology and Readiness report) found that 59% of American Schools are rated as Low Technology Schools and are not providing learning environments conducive to future workplace success. Nationwide, 58% of schools where more than a third of the students are eligible for free and reduced lunch are wired compared to 78% of schools where only 10% of the students are eligible for the lunch discount.[2] Many Florida high schools do not have adequate computer stations, while connectivity issues tend to be the biggest hurdle in the more rural areas. Unfortunately, we had some students trying to take courses at schools where the servers were down for a week at a time.

Finally, we discovered that having access only during the school day is not sufficient.

A Reasonable Pace Must Be Set

"Any path, any pace" was seen by many students as an invitation to move at a snail's pace. Because our courses are primarily accessed by students14-18 years of age, many have not developed strong organizational and time management skills. While it is important to us that students be able to move at their own pace, we are putting measures in place to help students stay on track and thus complete the courses. Beginning in the fall, students will choose an appropriate pace based on their learning styles and personal timelines. These paces include:

- *Step by step*: Students move through the lessons paralleling a traditional school calendar.
- *Accelerated pace*: Students move on a fast track, possibly achieving an early completion date.
- *Extended pace*: Students taking a semester course are given a regular semester plus an additional nine weeks to complete the work. Year long courses are granted a full calendar year.

Students declare their intended completion date at the beginning of a course, and teachers help them stay on track so that the goals can be met. We now include in our monthly progress reports the percentage of the course that is completed at that time. This information is emailed to the student and the district contact so that appropriate school personnel are kept informed of their students' progress in our courses.

Strong Business-to-School Partnerships Are Crucial to Our Success

We have a variety of business partners including IBM, several software companies and several publishing houses. Together, they provide us with emerging technologies and delivery systems. Our courses undergo continual upgrades and enhancements to assure that students have timely information at their fingertips and are given the opportunity to take advantage of the latest technological advancements.

Strong School-to-School Partnerships Are Crucial to Our Success

Florida High School recognizes the importance of strong partnerships with the public schools. In many cases, we offer schools the opportunity to provide advanced placement or alternative courses they otherwise would not be able to offer. It is our intent to provide choices for students and schools, and not be seen as an attempt to take away students. To accommodate the varying needs of Florida school districts, their affiliation agreement with FHS allows them to determine which courses they will allow their students to take. A district contact is designated locally, and helps distribute information about courses, forwards grades to the local schools, and helps coordinate the face to face final exams. The district contact provides valuable feedback about the courses, and concerns the schools may be having. Guidance counselors play a key role in the day to day process because their signature is required on every student's AUP (Acceptable Use Policy). In an online learning environment, we don't actually know the students at the time they register for a course. We value the counselors' recommendations concerning student course selections, and the advice they give to students in this area.

Accidental Adversaries Are a Reality

The underlying design of FHS is dependent upon individual Florida school districts for the registration and enrollment of potentially successful students. One of the big design flaws of this system is that FHS is a threat to many schools and districts. If students have a successful learning experience, might that have negative fiscal implications for the students' local district? Will FHS accidentally replace existing classrooms and the teachers who occupy them? These are very real fears that we work hard to help districts overcome.

Drop Policies Are Necessary

Florida High School recognizes that online learning is a new venture for high school students. Many students equate online courses with games played on the Internet. Because of this, we have been flexible and understanding when students get into a course and discover this style of learning is not for them. Add to this, schools sometimes put students into the courses for babysitting purposes, knowing they would most likely drop towards the end of the semester. Unfortunately, it has contributed to a drop rate that is higher than we want, and has exhausted valuable resources and teacher time and energy. We are currently reassessing our drop policy in an attempt to get students to make a stronger commitment when they sign up for courses, while allowing a reasonable drop period at the beginning of the courses.

Face to Face Final Exams Are Easier Said Than Done

When we meet with groups around the state, invariably the question comes up, "How do you know that the person taking the course is the person doing the work?" One accountability measure we have in place is a face to face final exam. Students do not pass a course until they have passed the final exam. Local school personnel proctor most students who take courses during the school day. Home school students have been a bit more of a challenge because we wanted to find local proctors other than their parents. Frequently, the public schools wanted nothing to do with the home school students. We are attempting to work out a process with the community colleges to use their testing facilities, although this is proving to be a bigger challenge than we first imagined.

Courses Taken in Computer Labs Have Been a Challenge

Problems encountered in school computer labs include:

- Problems occurred when proxy servers blocked students from accessing files in the courses due to the numbering system of our files.
- Servers occasionally went down for days at a time, meaning students could not access their courses.
- Schools would not allow students to load necessary software onto the computers.
- Some schools would not allow students to save their work onto floppies.
- Some labs were unmonitored, which resulted in students playing online games or surfing the Net during class time.
- Schools felt no responsibility for their students taking our courses. If a student incurred a problem in one of our courses, schools did not tend to help the student, and furthermore, did not contact us to let us know of the problem until the student was hopelessly frustrated.

High-Tech Needs *High-Touch*

High school students in an online learning environment need safety nets woven into the school's infrastructure to facilitate their successes. The absence of physical contact may just create the need for more virtual contact. Our teachers are in contact with our students almost daily via phone, email and fax. Our guidance director maintains communication with local schools, our students and their parents. We offer students an online chat area, "Club Web," where they are able to communicate with one another on an informal basis.

In the 1999-2000 school year, we will be offering two new technologies to increase communication among all stakeholders. The first is "Learning Server" which will allow our teachers to hold synchronous seminars and conferences with their students. The second is "Learning Village" which will allow us to hold online parent-teacher-guidance conferences as well as give our teachers the ability to create an environment where students can work on projects together and with real world private sector mentors.

Inquiring Minds Don't Know We Exist

Recently we were guest lecturing in a local university when the professor said to his class of sixty graduate students, "It's very disheartening to find that FHS is the best kept secret in this state." His point is one we continually face. Although we have created good working relationships with district level staff throughout the state, we still have a long way to go in reaching site-based personnel, parents and students. We have learned that, although educational marketing is traditionally met with raised eyebrows, we will need to launch an intelligent marketing campaign in order to reach our target audience. We can't depend upon school districts to market our courses.

Looking into the Crystal Ball: Pondering the Future of The Florida High School

- What are the funding sources and realities for FHS?
- How will the governance of the school evolve?
- How will the school stay abreast of emerging technologies?
- How will the evolution of the Internet affect the school?
- How will cost-effectiveness be measured?
- Will we successfully curtail the drop rate?
- How will we manage growth?
- Is our model replicable?

In *Growing Up Digital*, Tapscott states, " . . . change a school and you change the world."[3] FHS is a learning community where the staff members view themselves as agents of change. Our school is a precursor of the changing direction of public school education.

References

Roper Starch Worldwide Inc. (1996). The two Americas: Tools for succeeding in a polarized marketplace. Roper Youth Report.

National Center for Education Statistics. (1995). *Advanced telecommunications in US public elementary schools*. www.ed.gov./NCES/

Tapscott, D. (1998). *Growing up digital.* New York: McGraw-Hill.

Biographical Sketches

Donna Weisman serves as the Regional Coordinator of The Florida High School for the northern part of the state. Donna received her Bachelor's Degree in Elementary Education from Florida State University and her Masters' Degree in Educational Leadership. During her 17 years of teaching, Donna was very active in the area of professional development, serving as chair of the Teacher Education Center for Leon County, Site Based Facilitator, and resource teacher for the county's Alternative Assessment program. Donna has led a variety of workshops and has presented at numerous conferences including ASCD, FETC, and the National School Board's Technology and Learning Conference.

Address: 6435 Bold Venture Trail
Tallahassee, Florida 32308
E-mail: weismand@fhs.net
Phone: (850) 668-0143
Fax: (850) 906-9709

Pam Birtolo is FHS's Regional Coordinator for South Florida. Pam holds an MA in English Education and a BA in Spanish. After teaching high school English for seven years in rural Collier County, Pam left the classroom to form her own corporation that specializes in teaching educators how to integrate technology and curriculum. For the past three years she has been instrumental in the development, design and delivery of technology staff development in Collier County school district, and was involved with an FHS pilot American Government class in Collier County in the summer of 1998. Pam brings boundless energy and expertise to the FHS staff. She is a firm believer in the FHS motto "any time, any place, any path, any pace." When Pam's not teaching, she's either playing on a computer (she thinks developing databases is fun!), or playing on the Gulf with her husband and son. (She also thinks knee boarding is fun!)

Address: 7903 Gardner Dr.
Naples, Florida 34109-0610
E-mail: pbirtolo@fhs.net
Phone: (941) 594-7463
Fax: (941) 594-5613

Preparing Students for Asynchronous, Computer-Mediated Coursework: Design & Delivery of a "Distance Education Bootcamp"

Donald J. Winiecki, Ed.D., Assistant Professor
Boise State University, College of Engineering
Department of Instructional & Performance Technology

Introduction

Students entering distance education are often isolated from their teachers, classmates and technical support. Feelings of isolation and difficulty overcoming the technical issues of computer-mediated instruction are common for distance education students and may endanger their success and completion of coursework (Granger & Benke, 1998; Eastmond, 1995). This session will discuss the design, development and delivery of a one-week long "bootcamp" for beginning distance education students – that was delivered entirely by distance media. This "bootcamp" experience was designed to be proactive in (a) helping students to build interdependent support groups, (b) become familiar with the learning environment, and (c) overcome technical difficulties before learning begins. This paper briefly describes the theoretical models that informed design, methods and practices of developing and delivering the bootcamp, and student descriptions of the experience and how it affected their ability to learn at a distance.

The Instructional & Performance Technology program at Boise State University offers a Master of Science degree entirely through an ALN. The department has developed and delivered a "distance education bootcamp" for distance students that assists them in acquiring the three interactive skills of a community member (Hymes, 1974). Additionally, because students are all geographically separated from the Boise State campus, this "bootcamp" experience is delivered asynchronously.

Description of the Problem

Success in a distance education class requires a student to adapt his or her classroom experiences, to accommodate the unique constraints and conditions of an asynchronous, computer-mediated classroom. For example, while a distance student can interact with classmates through the instructional medium, he or she is still geographically isolated from classmates. To some students, the social experience of "class" is an important attribute of learning (Mehan, 1980; 1979), and this isolation can have undesirable side effects on a student's learning experiences (Granger & Benke, 1998; Eastmond, 1995).

Additionally, being geographically isolated from "school" can make it very difficult for a student to seek and get assistance with technological problems (Granger & Benke, 1998). However, there are technological means for seeking and receiving such assistance. For example, in a computer-mediated asynchronous course, a student can communicate with his or her instructor and support personnel by telephone, E-mail, and several other options. However, not knowing all of the options available can lead to problems that persist, lagging student motivation and potentially damaging affects on course participation, enjoyment and accomplishment of learning (Granger & Benke, 1998; Eastmond, 1995).

Distance education is proposed as a "more accessible" form of education. However, because of these technological obstacles, becoming a distance education student may be considered a somewhat more elitist form of education – only accessible to those who are able to overcome these problems independently. In order to improve the accessibility of distance education and to improve student satisfaction and feeling of accomplishment, it becomes necessary to assist beginning and ongoing students to prepare for class. These preparations include familiar tasks like registration and student advisement, but also include technological support in acquiring, configuring and mastering the tools, media and methods of distance education.

Successful "Membership" in a Distance Education Community

Being a member of a community requires three different types of interactive skills (Winiecki, 1999; Hymes, 1974). First, the person must master the behavioral skills of interaction. In a virtual learning community, the behavioral skills of manipulating communications technology are similarly necessary. Second, the person must know the language used by his or her compatriots and how to use it to accomplish certain tasks. In an asynchronous learning network (ALN), the language is sometimes highly technical – for example when discussing technological problems – or it can be the common language shared by his or her classmates. Third, the learner must be able to utilize the first two skills *and* know how and when to ask or say certain things during the course of interaction. For example, knowing how to ask for help – and to state such a request in the appropriate "place" in a course (e.g., in a "tech support" area), and not in the midst of a discussion over curricular materials.

Media, Methods and Materials of the Bootcamp

Media

There are four media used to deliver the "bootcamp," (a) telephone, (b) Internet E-mail and a listserv, (c) static webpages and job aids, and (d) Lotus LearningSpace – the same software that we use to deliver our distance education courses. Multiple media are utilized to permit parties to utilize familiar technologies (telephone, printed job aids, E-mail) while they are learning how to use unfamiliar technologies. Eventually, all communication, tech support, etc. is accomplished in LearningSpace, at which time the student is allowed to progress at his or her own pace through a series of self-directed activities to learn how to perform common "classroom" tasks.

Methods

The bootcamp begins two weeks prior to the start of a new semester. Students are provided with printed job aids that direct the installation of Lotus Notes and LearningSpace courses. Students are provided with 800-number, E-mail addresses and a listserv address for soliciting technical assistance if they have trouble. Two persons (a full-time staff member, and a faculty member) receive these requests. To date, "bootcamps" have included up to 65 persons. Experience shows that, while at times technical support is a busy job, two persons can handle the job satisfactorily.

After students have successfully installed and configured Lotus Notes and their LearningSpace classes, they are directed to enter a special online classroom and begin a set of programmed instruction-type activities that provide them with practice in accomplishing tasks they will be expected to perform as students. In this classroom, they prepare their own "profile" document, download additional software and media-readers, and have access to online technical support and discussion areas.

The purpose of these programmed activities is to provide practice in the behavioral skills of online interaction (the first of Hymes' social membership skills). Additionally, when completing these activities, students are required to engage in online discussions with instructors and fellow students. The result of these ad hoc discussions is experience in a simulated classroom situation. Instructors model the sort of communication behaviors that are desirable in classroom situations (Winiecki, 1999). This supports the development of the second of Hymes' social membership skills. When necessary, instructors provide "tips" or other technique-oriented guidance.

Additionally, there is a great variance in the skills students already possess when they enter the bootcamp experience. The "bootcamp" experience is designed so that more capable students can accomplish tasks unimpeded but is also designed with many opportunities for asking questions and receiving feedback so that less confident students always have a "safety net."

Providing students with different "paths" through the bootcamp experience has had beneficial side effects. Not the least of these is that more capable students will adopt the role of a "more capable peer" in assisting less confident students. This "social learning" opportunity serves to help students acquire the ability to exhibit the third of Hymes' social membership skills.

Materials

Twenty-five job aids to support the performance of the most common tasks, and responses to the most common tech support questions, have been prepared and are delivered to students on an as-needed basis. Job aids are revised and new ones are created in response to emerging needs from the student population. These job aids are made available to all ongoing students so that the student population is always in possession of the most current support materials.

Student Responses to the Bootcamp Experience

In an end of experience survey, students have the opportunity to comment and critique on the bootcamp. In general, comments express satisfaction with the experience and reinforce its necessity. In particular, student comments address three areas, (a) tech support, (b) using LearningSpace, and (c) development of a community of learners.

Tech support

Tech support offered via telephone, E-mail, listserv and eventually in a special discussion area in LearningSpace is universally applauded. Students rate ongoing technical support as the single-most important feature of the "bootcamp" experience. Many students indicate that they would have dropped out or would be in a constant struggle if it were not for the existence of easy-to-access technical support from the very start. For example, one student told "If it weren't for [the tech support personnel], I would have given up a long time ago. At first I felt so confused and alone but now I know there is someone I can rely on whenever I need it! GREAT JOB!"

Using LearningSpace

Students consistently remark on the utility of job aids supporting the use of LearningSpace. These job aids are designed to be supports for students – but not an "additional learning task." It is true that students eventually learn how to use the system without job aids, but beginning students echo that they are an essential component of their ability to succeed. For example, one student remarked "I wouldn't be able to do *anything* without the job aids – they're INDESPENSIBLE!"

Development of a Community of Learners

To date, students do not indicate that the bootcamp experience is sufficient for permitting them to develop a sense of "online community" with their instructors and classmates. Reasons offered for this include the short duration of the bootcamp (two weeks), an apparent emphasis on acquiring skills for using LearningSpace, and not feeling a need to have such a community.

Conclusions

Students new to distance education are entering a world that is both familiar and strange. Providing them with the support necessary for them to achieve their individual goals and satisfy their individual needs is an important facet of a distance education program. From experience, we have learned that student support is a necessary component of a successful distance education program. The "bootcamp" experience provided to students in the Instructional & Performance Technology department at Boise State University accomplishes this student support in a compressed, two-week "bootcamp" format. During the "bootcamp," students have access to three forms of support, (a) ongoing technical support, (b) job aids and "coaching" activities on using the instructional technology and (c) the opportunity to develop a community of learners.

References

Eastmond, D. (1995). *Alone but together: Adult distance study through computer conferencing. Cresskill*, NJ: Hampton Press.

Granger, D., & Benke, M. (1998). Supporting the distance learner. In C. Gibson (Ed.). *Distance learners in higher education: Institutional responses for quality outcomes*. Madison, WI: Atwood Publishing.

Hymes, D. (1974). *Foundations in sociolinguistics: An ethnographic approach*. Philadelphia, PA: University of Pennsylvania Press.

Mehan, H. (1980). *The competent student. Anthropology & Education Quarterly, 9* (3). 131-152.

Mehan, H. (1979). *Learning lessons*. Cambridge, MA: Harvard University Press.

Winiecki, D. J. (1999). Keeping the thread: Adapting conversational practice to help distance students and instructors manage discussions in an asynchronous learning network. *DEOSNEWS* [On-line], (9) 2. Available: Post E-mail to listserv@lists.psu.edu and include the following command in the body of message: get deosnews 99-00002

Biographical Sketch

Dr. Donald J. Winiecki is an Assistant Professor, and full-time graduate faculty in the Instructional & Performance Technology department at Boise State University. He is experienced as a designer of training and computer-based training and electronic performance support systems for industry and the U. S. military. He researches call centers, help desks and other delivery of technical support and customer service through technological media. He is a published researcher and has presented before the International Society for Performance Improvement, the American Educational Research Association and the Association for Computing Machinery. He has delivered distance education courses to Master level students via both asynchronous learning networks (ALN) and digital compressed video, since 1996.

Address: Boise State University, College of Engineering
Department of Instructional & Performance Technology
1910 University Drive
Boise, Idaho 83725-2070 USA
E-mail: dwiniecki@boisestate.edu
URL: http://coen.boisestate.edu/aboutus/faculty/dwiniecki.htm
Phone: (208) 426-1899 (voice)
Fax: (208) 426-1970

Crossing
the
International Communication Barriers

Mr Thomas E Wolfe, Chair
Instructional Technology Department
Academic Instructor School
Maxwell AFB, Alabama

Abstract

Today, within the United States, we frequently hear of individuals or groups who are offended by people who lack an understanding or concern for cultural differences among people. Nationally, we have been working hard to overcome these barriers to communication and learning. As the use of current technology continues to grow, more and more educational programs are being provided to people around the world through a wide range of distance learning mediums. With the use of the internet, the worldwide web, CD-ROM, video-tape, video teleconferencing and interactive television, to name a few, educational programs are more accessible to a wide range of international students. The potential for international differences becoming a barrier to communication and learning has increased significantly. This paper will look at some of the international communication barriers that may impede learning, reflect negatively on institutions or individuals providing the distance learning instruction, and create misunderstandings between peoples of varying countries and cultures. It is the position of this paper that the development of international distance learning programs requires an awareness of international cultural differences and their impact on the communication process and effective learning.

Introduction

A number of years ago, I was given the task of developing and teaching a unique 3-week Instructor Course for 10 students from 7 different countries in Asia, the Mid-East and Africa. Not only did I have apprehensions about such a challenge, but a number of my colleagues felt that I would need to "water down" the curriculum for the course because of a perceived inability of international students to meet the demanding standards of the equivalent course for our U.S. students. Although the "special" instructor preparation course was to be only 3-weeks long, while our regular course was 5 ½-weeks long, I decided to maintain the same standards for the International Course but make the course adjustments to meet the identified needs of the international students.

Since that time I have had a number of "special" international instructor preparation courses with a wide variety of continents, countries, and religions represented in each class, as well as having had numerous classes with one or two international students within a larger group of U.S. students.

The differences in cultures, I have found, are usually based on those values people find important to them and their way of life. Since these ideas and beliefs are normally held very dear, it is easy for a person to become very upset about something that someone from another culture or background is unaware of or considers is trivial. A lack of understanding of different cultural, political, and/or religious ideas can create a sometimes insurmountable communication barrier and obviously minimizes learning.

It is impossible to identify and discuss all the differences in each culture or country in this paper. What we will do is look generally at three areas: communication, politics, and religion and some examples of potential problems in each area. The purpose is for designers as well as those who deliver distance learning across cultures to be aware of potential problems and recognize that human differences can, and frequently do, create communication barriers.

International Communication Barriers

In order to ensure that we are all on the same starting page, let me introduce the definition of culture that I will be using for the purposes of this paper.

Webster's II New Riverside University dictionary © 1994, defines culture as; "The totality of socially transmitted behavior patterns, arts, beliefs, institutions, and all other products of human work and thought typical of a population or community at a given time."

Although the definition appears very broad, it does incorporate the three ideas, communication, politics, and religion, that we will be touching on. It is these culturally unique behavior patterns, beliefs, art, and language that do set groups apart and frequently create conflict. More often than not, people see the world from their own personal experiences and are sure that their way, belief, or philosophy is the only way. Too often little time is taken to look at another's point of view or attempt to understand another culture. Lest we be confused, let me point out that this problem of cultural differences is not new and may probably best be established with a fine example from Mr. Ben Franklin, which he wrote over 200 years ago . . .

The Indian's Refusal

> At the treaty of Lancaster, in Pennsylvania, anno 1744, between the Government of Virginia and the Six nations, the Commissioners from Virginia acquainted the Indians by a speech, that there was at Williamsburg a college, with a fund for educating Indian youth; and that if the chiefs of the Six nations would send down half a dozen of their sons to that college, the government would take care that they be well provided for and instructed in all the learning of the white people. To which gracious invitation the Indian's spokesman replied with equal grace:
>
> *"We have had some experience of it; several of our young people were formerly brought up at the colleges of the northern provinces; they were instructed in all your sciences; but when they came back to us they were bad runners, ignorant of every means of living in the woods,*

> *unable to bear either cold or hunger, knew neither how to build a cabin, take a deer nor kill an enemy, spoke our language imperfectly...were therefore fit neither for hunters, warriors nor counselors; they were totally good for nothing. We are, however, not the less obligated by your kind offer, though we decline accepting it; and to show our grateful sense of it, if the gentlemen of Virginia will send us a dozen of their sons, we will take care of their education, instruct them in all we know and make men of them."*

(Taken from Mr Franklin's pamphlet
Remarks Concerning the Savage North America, ca. 1784)

Apparently both the Commissioners from Virginia and the chiefs of the Six Indian Nations had a firm idea of what each considered important in the educating of young men, yet they were miles apart. Each had what they thought was a valid perception based on their own culture and its needs.

In June of this year we were again reminded of our national cultural differences and issues during the 14th annual Conference of the National Multicultural Institute in Washington, D.C. The same kind of cultural differences identified by Ben Franklin in 1784 and the National MultiCultural Institute in 1999 are the differences and lack of understanding which can easily develop in international distance learning programs.

Even though it is not possible to cover all of the issues and concerns, certainly we can be aware of some of the potential pitfalls. Probably an area that most frequently comes to mind is verbal and non-verbal communication concerns. The words we use and even our voice inflections can create barriers to effective communication and learning. Such simple behaviors as pointing a finger, nodding one's head as if in agreement, or raising one's eyebrows, are just a few of the hundreds of gestures that have different meanings in different cultures. During one course with international students a question was raised concerning an instructor's credibility because the instructor allowed students to verbally challenge him during class. This international student, based on his cultural background, thought it totally improper for a student to debate or question any instructor and saw that as a sign of weakness on the part of the instructor. Not all verbal or non-verbal differences can be anticipated or avoided but certainly an awareness and honest concern will help us minimize potential conflicts when designing and delivering distance learning courses.

A second area of concern that needs to be noted is the potential for misunderstanding and conflict resulting from a lack of awareness of political beliefs. A few years ago during a small 3-week international class with 10 international students from 7 different countries, an Egyptian student was giving a presentation concerning the Middle East and specifically the June 1967 war in that area. During the course of his presentation he mentioned the PLO terrorist movement and their role in the conflict. As he continued to discuss the PLO activities it became apparent that a student from Jordan was getting visibly upset. Finally this Jordanian student interrupted to announce to the entire class that his wife was an active member of the PLO and they were not "terrorists" but "freedom fighters." Some quick intervention and dialogue by the instructor defused the situation and all agreed they had learned a valuable lesson about cultural differences.

During another class, taught during the late 1980's, 11 of the 12 international students in the class had had the majority of their military flying training in Russian schools and Russian aircraft. The one member of the class who had not had Russian training but received his training through the U.S., was from South Korean— avid enemies of communism. As the young man from Korea introduced himself, he was asked by an Algerian student if he was North Korean or South Korean; a question he found extremely insulting and inflammatory. Although this may sound like a logical and innocent question for clarification, because of the strong individual political beliefs it set up communication barrier for the class. Both of these scenarios occurred in a traditional classroom setting where the non-verbal behaviors were obvious and immediate positive reaction on part the instructor aided in resolving the problems. In a distance learning scenario, something which might appear small and inconsequential, is not small or inconsequential to the person offended and can fester into disruptive or antagonistic attitudes and behavior detrimental to the class, instructor, or the institution sponsoring the educational program.

Most of us cling very strongly to the values, beliefs, and teachings of our religion. For many it is easy to ignore the strength and comfort others derive from their beliefs. Unfortunately sometimes it is easier for us to sit back and assume "different" is wrong. Probably one of my greatest learning experiences came as an instructor for a group of 12 students from 8 countries, which spanned 4 continents, and had representatives from the following religions: Christianity, Judaism, Taoism, Moslem, Buddhism, and Islamism and to round out the group, one student was an Atheist. I didn't realize the religious make-up of the group until one student, during a class presentation started referring to God and his Christian beliefs. As he continued to talk an undercurrent began in the classroom. I intervened and discovered the underlying different religious beliefs and decided to set time aside to discuss and learn a little about each other's culture and religion.

This obviously is not a likely scenario for a distance learning lesson but I think the concept of being aware of differences in beliefs, ideas and cultures is. There is much we as educators, course designers and those who deliver distance learning can do to minimize potential conflicts. To videotape a traditional class in the traditional setting and then distribute it as a distance learning course without taking into account these differences could be an invitation to potential misunderstandings.

Conclusions

What we've done is look, in a very broad way, at real issues relating to international cultural differences. Yet they are very similar to some of the cultural problems and issues we see within our own U.S. boarders. I think we can also recognize that it is not possible to plan for all potential problems that our strong individual values and beliefs allow for; however, an awareness of our differences, nationally and internationally, can go a long way in minimizing problems and improving sound distance learning programs.

From my experiences I have come to believe that people from throughout the world have far more in common than they have differences. The more we focus on the things which are common to us all, the more we can understand and accept the differences. Let me close with this idea by Laura B. Jones:

I Walked in His Moccasins

No one person or group of persons has a monopoly on feelings.
The Red man's hurts are just as deep,
the Yellow man's fears are just as real,
the Black man's frustrations are just as great,
the White man's sadnesses are just as strong.
Contentment such as that which people enjoy as they sit
serenely when day is done, is neither rationed by color, dispersed
by race, divided by sex, nor dependent on position.
Together we share the spectrum of human needs

References

Axtell, R. E. (1991). *The do's and taboos of body language around the world.* John Wiley & Sons.

Batachelder, D., & Warner, E. G.(1980). *Beyond experience,* Vermont, The Experiment Press.

Connell, T., Capt., USAF, Ed. (1990). *Cross cultural communications course* (6th ed.) USAFSOS/EDRC, Hurlburt Field, FL.

Hall, E. T. (1977). *Beyond culture.* Doubleday Anchor.

Biographical Sketch

Tom Wolfe is Chair, Instructional Methods and Technology Department at the USAF Academic Instructor School (AIS), "The Teacher's College of the Air Force." He has been teaching throughout USAF Professional Military Education (PME) programs since 1968. He joined the faculty of AIS in 1985 and has served as Chief, Evaluation Branch Assistant Dean of Curriculum, and Chair, Performance Technology Department prior to his current position. He has been heavily involved in Distance Learning since 1993 and has written numerous papers relating to his specialty, Instructor Preparation for Distance Learning. In December, 1998 he was named the outstanding USAF Education & Training Civilian Educator of the Year.

Address: OAS/ISOM
60 Shumacher Street
Maxwell AFB, AL 36112
E-mail: thomas.wolfe@maxwell.af.mil or pandtwolfe@aol.com
Phone: (334) 953-6603
Fax: (334) 953-4335

❖ Workshops & Cracker Barrels ❖

An Overview of HTML for Distance Education

Wayne Batchelder, Multimedia Instructor/Web Manager
The Art Institute of Dallas

Catherine Tompkins, Director of the School of Media Arts
The Art Institute of Dallas

Why Learn HTML?

Instructors are bombarded with a variety of proprietary software solutions designed to publish their courses for distance education purposes. Many of these systems lock the user into specific models of learning due to software design choices. Learning the Hypertext Markup Language, the tagging language of the Web, provides instructors with the ability to create Web based courses or to supplement existing on-ground courses with Web sites. A Web site can serve to increase the learning methodologies available to students, and thus reach a wider variety of learning styles.

This approach is not to confront the products and services being developed to deliver online courses. Institutions will have to make choices and use proprietary systems to address the growing demand for online courses. However, it is important that educators develop fundamental skills that allow them to be involved in the processes by which we take courses from on-ground to on-line. It is a time for unique learning environments and the more involved the classroom instructor is in the process, the better our chances to implement good educational design.

Learning the basics of HTML will strengthen an instructors ability to use WYSIWYG (what you see is what you get) types of HTML applications also. With a good understanding of the limitations and potential of HTML, users can then expand to more powerful solutions such as those offered by editors such as FrontPage, PageMill, NetObjects Fusion, GoLive, and Dreamweaver.

Web page development and HTML is important to instructors because there is much that can be accomplished with a Web based instruction site. Whether you want to add support to an existing on-ground class that you teach, provide tutorials to supplement other teaching, or provide training modules or courses to a wider audience, knowledge of HTML will allow you to build it your way, to use your techniques rather than the techniques of proprietary software developers.

Many teachers assume that HTML is too difficult to learn. While it is "tedious" and requires detail oriented work, it is not difficult to learn if you want to learn it. The potential for teachers to use the Web for instructional purposes far out weigh the time it will take to learn it. The future of distance education needs educators who can provide innovative educational solutions, and they will need to be in control of the technology to make this happen. Learning basic HTML is a great starting point. A wonderful tool to have in your repertoire of skills.

This workshop will focus on teaching basic HTML. This means that not everything about HTML and implementing a Web site on the World Wide Web will be included in this brief workshop and accompanying Online training module. It is a beginning process for instructors who wish to learn how to put their own course content online. More specifically, the workshop will focus on providing each participant with experiences in:

- Learning how the Hypertext Markup Language works
- Being able to recognize and identify Hypertext Markup Language files
- Create a simple Web pages that can be uploaded to the World Wide Web
- Build template pages in HTML, suitable for a course syllabus and instructional pages (on Web site that accompanies this workshop)
- Identify resources on the Web and otherwise available that will further the learning process

Web Site Companion to this Workshop

It would be naive to assume that a three-hour workshop that doesn't have the advantage of hands-on experience will successfully teach all attendees the objectives of this workshop. A Web site has been developed to supplement the workshop. It is designed as a 4-week program, although it can be used in any time frame the user may choose. The instructor will provide support during the 4 week period, through the use of email and a Web based forum.

The Process of Web Design

While it is not the focus of this workshop to teach principles of the web design process, it is important to emphasize that any Web based project should be planned. The planning process should include at least the following phases of development:

- Define a clear statement of purpose and specific objectives for the site
- Define the target audience—not just a class—but define the types of students who will be in the class and what is known about them
- Gather information and content and organize it according to site objectives
- Plan the actual pages in a detailed storyboard style for each page as well as a flow chart that defines the sections and how the pages will relate to one another
- Implement the HTML coding for the pages (It is best while new to HTML coding, to keep a simple structure, perhaps create several template pages, then add the content to the pages)
- Test your Web pages and make sure all links work correctly according to your plan.

A written description of a structured process can be found in Web Navigation, by Jennifer Fleming (Chapter 6, "Looking at Process"). She describes a six phase "multimedia" process which includes Information Gathering, Strategy, Prototyping, Implementation, Launch, and Maintenance and Growth. The book is also a great resource for understanding "user centered" design processes for Web development.

What Is HTML?

To begin with, HTML is not a programming language! It is a series of structured "tags" that allow you to organize how information is presented on a Web page when viewed by a browser. HTML is written as a text file (as opposed to a Word or Word Perfect document). To actually view an HTML file, you must use a "browser" application, which parses (interprets) the information and displays it. HTML thus describes the structure of a document rather than its appearance.

The Hypertext Markup Language is unique in that it is a hypertext environment, which means that it enables the user to read and navigate text and graphic information in a non-linear way, depending on what it is the user wants to know next. It is also cross-platform which means that you can access information from the Web on practically any computer platform using any operating system and most monitors. And because you can update Web pages at any time, HTML is dynamic. HTML also provides interactive, capability in that users can send responses to forms and "talk back" to the site owner.

Tools of HTML

HTML files can be written with any text editor such as SimpleText on the Macintosh, or Notepad on Windows machines. More advanced "HTML editors" are also available, that save a lot of typing by inserting the HTML tags when you specify them, making it much faster to write the tags. BBEdit Lite or BBEdit Pro on the Macintosh, or Homesite on Windows are examples of the best of this type of product. Shareware or trial versions of these products are available for download from the Web.

Word processors can be used as HTML text editors if you remember to save your HTML oriented documents as text files instead of the word processors native format. Using a word processor is not recommended for beginning to learn the basics of HTML. And it is particularly not recommended that you create documents in a word processor and then have the word processor convert the text to HTML. The purpose here is to learn HTML, not to have it done for you!

Good HTML Style

It is important to develop a style for writing HTML. HTML is case insensitive and it can be written as one continuous block of text or any way the user wishes to write. However, it is also necessary to edit your HTML pages, and often work as a team to build a Web site, which makes it important that pages are written with a consistent style. A few guidelines will keep you out of trouble.

1. HTML tags and attributes should be capitalized. This makes them stand out when trying to edit a document.

2. Use line breaks, skip lines and use tabs to offset certain tags. HTML does not pay attention to line breaks or tabs, but you can use them in the actual HTML document to make it easier to offset sections of a document and put space between elements that need to be visible.

3. Never use spaces or special characters such as %, #, !, etc. in file names. Use only letters, numbers, underscores, hyphens and periods in file names.

4. Use the proper extensions. HTML documents require the suffix or extension .html (or .htm if on a Windows server). Graphics files require either .jpg for Jpeg images, or .gif for GIF formatted images. (Only Gif or Jpeg compressed images can be used on the Web currently).

5. File names are case-sensitive in HTML. Use all lower case letters in file names and never have to remember how you wrote it.

6. Use only Web colors, the 216 color palette. The Web safe colors will mean color consistency on most Windows, Mac, and Unix systems.

References

Fleming, J. (1998). *Web navigation: Designing the user experience*. Cambridge: O'Reilly & Associates.

Lynch, P. J., & Horton, S. (1999). *Web style guide: Basic design principles for creating Web sites*. New Haven: Yale University Press.

Niederst, J. (1999). *Web design in a nutshell: A desktop quick reference*. Cambridge: O'Reilly & Associates.

Biographical Sketches

Wayne Batchelder is an instructor in the Multimedia and Web Development department of The Art Institute of Dallas. He develops curriculum and teaches courses related to Web development. He also serves as Web Manager for the school with responsibilities for developing and maintaining the school Web site and developing educational programs with Web-based tools that support educational objectives of the school. He is also certified to teach online courses and will begin teaching online courses for EDMC Online in the Fall.

Address: The Art Institute of Dallas
Two Northpark
8080 Park Lane
Dallas, TX 75231
E-mail: batchelw@aii.edu
Phone: (214) 692-8080
Fax: (214) 692-6541

Catherine Lee Tompkins has served as the Director of the School of Media Arts for the Art Institute of Dallas for four years, managing the Multimedia and Web Development, Computer Animation, and Video Production departments. Catherine is currently back in the classroom teaching computer applications and working with EDMC Online in their course conversion process. Catherine has a master's degree in Business Computer Information Systems and Management from the University of North Texas and is extremely interested in the online learning environment and how to deliver new media such as Web-based instruction through distance learning.

Address: The Art Institute of Dallas
Two Northpark
8080 Park Lane
Dallas, TX 75231
E-mail: tompkinc@aii.edu
Phone: (214) 692-8080
Fax: (214) 692-6541

Teaching on the Web:
With a Little Help From Your Pedagogical Friends

Curtis J. Bonk, Ph.D.
Associate Professor, Counseling and Educational Psychology
Indiana University

Vanessa Dennen, Doctoral Candidate
Instructional Systems Technology
Indiana University

As the 1990s draw to a close, more and more universities are making a move toward teaching on the Web. This technology, which has been available only during this decade, has had a major impact on distance education in a short period of time. Web-based course tools have proliferated as a result of education's demand for tools created by this move to teaching on the Web, and as well as from a push from software developers to make this type of instruction easier to adopt and use. Tools alone are not enough. Instructors teaching in this new medium need to consider the pedagogical needs of their teaching situation before designing and implementing a course on the Web.

Certainly the Web provides interesting opportunities for instruction and learning that go beyond our traditional notions of educational activities (Bonk & Cunningham, 1998; Harasim, Hiltz, Teles, & Turoff, 1995). However, one key component is missing from much of this tool development – consideration of new and innovative pedagogical methods on the Web. Web tools have the potential, when used in a carefully planned manner, to foster the development of learner-centered instruction.

Many of the Web-based course tools currently available, such as Top Class, Course Info, and Web CT to name just a few, make it simple for instructors to distribute their syllabus and other course materials, give quizzes and tests, and lead class discussions on the Web. These tools, however, do not help instructors lead discussions on the Web, nor to they give instructors advice on what frameworks and guidelines are needed in order to have a good discussion. While heavy on classroom management tools such as gradebooks, conspicuously absent from most Web courseware tools is assistance in exploring class activities beyond a very traditional lecture-discussion-test format.

The use of traditional classroom lecture and tests is dubious in a Web-based course. To simply lecture to students over the Web is to provide one-way communication in a potentially two-way medium, thus not using the medium to its fullest potential (Jonassen, Davidson, Collins, Campbell, & Haag, 1995). Furthermore, the use of online quizzes and tests for assessing student achievement in a Web-based course is questionable. How does an instructor monitor a student taking a test over the Web? Is it the actual student taking the test without help from others? Are notes being used? Is it being taken under timed circumstances? These questions suggest that such traditional course designs might not be best for the Web. Instead, we recommend a move toward course activities that promote active learning through critical thinking, creative thinking, and collaboration.

The Web offers many opportunities for critical thinking activities (Duffy, Dueber & Hawley, 1998). Critical thinking on the Web can be achieved through conferencing tools allowing for structured debate, reading reactions, reflection or minute papers, and other discussion and writing oriented activities. Other Web-based tools can be used to help students create graphical organizers for data (Bonk & Dennen, in press).

In terms of creative thinking activities, the Web can be used to push students beyond recitation and summarization of a given text. Students can brainstorm using synchronous chat tools, and engage in free writing, journal writing, and reflective writing using asynchronous conferencing tools. Given a safe environment and a certain level of control, students can use the Web environment to take academic risks, sharing ideas and hypotheses with their peers in the interest of getting feedback and making new connections.

The collaborative potential of the Web can be used to keep students from feeling alienated in a distance learning course. Unlike a correspondence model of instruction, the Web can be used to promote communication between the students in the course. It has been the authors' experience that, given the opportunity to interact and get to know peers in a Web-based course, students will achieve a higher level of peer interaction than is found in many face-to-face classrooms. E-mail buddies, jigsaw, and roundrobin discussion assignments all can be used to get students interacting with each other. The authors use open student portfolios of work to encourage sharing and peer feedback on all assignments. Small group projects also can be completed entirely on the Web.

How does an instructor become involved in using such pedagogical strategies in the Web-based classroom? And how does an instructor know which type of activity and tool to use in different situations? Bonk and Dennen (in press) promote the following considerations for instructors teaching on the Web:

1. **Determine the correct level of course integration.** Bonk, Cummings, Hara, Fischler, and Lee (1999) have proposed a ten-level Web integration continuum that demonstrates the pedagogical options that are presented to the faculty when the Web is used. At the lower levels of the continuum, the Web is used primarily for course marketing and information , resource sharing. At the higher levels of the continuum, namely levels six through ten, the Web becomes a more substantive part of the course and promotes active participation and sharing between instructor, students and even field experts.
2. **Determine the desired types of Web interactions.** Teacher-student interaction is generally the first type of course interaction that comes to mind. Cummings, Bonk and Jacobs (1999) explore a fuller range of interactions that can be promoted for learning on the Web using a 3 X 3 matrix of instructors, students, and practitioners. Interactions among and between each of these groups can provide rich learning experiences. To focus solely on the students in a distance education course, permitting students to talk to people other than their instructor can have tremendous benefit. Peers can mentor each other and give formative feedback while practitioners and field experts can make important connections between the classroom and the real world.

3. **Determine the desired types of course activities.** Examples of many possible course activities have been given above as examples of critical thinking, creative thinking, and collaboration on the Web. It is generally best for an instructor to select one or two such activities to try first and master facilitating those activities before moving on to others. Trying too many new things at once can be confusing for students, who also are adjusting to a new course medium, and overwhelming for the instructor. Whatever activities are chosen, they should be accompanied by clear participation guidelines and expectations. One other challenge is that students can often get sidetracked by dealing with the tool, resulting in less focus on the course content. The instructor needs to make sure activities will be within the students' technical comfort zone or needs to provide adequate technical support should it be needed.

4. **Develop yourself as a facilitator.** Web course facilitation is not the same as traditional course facilitation. There are fewer communication cues available on the Web, and learners and instructors are separated by space and often time. An instructor on the Web needs to find his or her own level of course control and involvement largely by trial and error. Some suggestions based on the authors' experiences are to make sure students are getting adequate feedback and know that their contributions are being read, but to strike a balance and avoid being overbearing or too controlling as an instructor. Micromanaging a Web-based course will only result in lower levels of learner control and rapid instructor exhaustion.

5. **Find the right tool for the right job.** Web courseware and conferencing tools are not all alike. An instructor should consider all available options, exploring their features for a good match with the desired level of integration, types of interactions, and course activities. Features of a given tool may include conferencing and sharing areas (such as synchronous and asynchronous discussion tools, document and web link sharing, and whiteboards), student-controlled areas (such as small group workspace, student web profiles and student portfolios), and course management features (such as course templates, gradebooks and assessment tools).

Most tools have demo sites for trying out a course on the Web. Using these demos along with getting feedback from students about their experiences with a particular tool is very important. An instructor should not rely on a list of features alone to select a tool; asynchronous discussion tools alone can be very different in terms of their ease of use, level of instructor and learner control, ability to archive old discussions, ability to track read messages, and organization or threading of messages. Instructors similarly should avoid letting the tool dictate their course activities. Even when bound by a university's adoption of a particular tool, insightful thinking to repurpose such software or creatively apply it can often result in useful pedagogical activities and innovative uses of such tools. Another option, if resources are available, is to create your own tool for teaching on the Web; the first author has done this with great success with the Smartweb (http://www.indiana.edu/~smartweb).

Teaching on the Web can be both a challenging and rewarding experience. Through awareness of levels of integration, types of interactions, types of course activities, methods of facilitation, and features of tools, instructors can design learning experiences for an active, learner-centered Web-based classroom. Decisions regarding what to teach and how to teach it depend on the individual instructor. The more the instructor reflects on his or her own pedagogy and carefully considers different tools and uses, the better the resulting courses will be. It is time for instructors to take charge, suggest what features tools should have and generate a greater network of sharing and resources for their peers. With a little help from our pedagogical friends, the future could have great things in store for distance learning on the Web.

References

Bonk, C. J., Cummings, J. A., Hara, N., Fischler, R. B., & Lee, S. M. (1999, April). *A ten level Web integration continuum for educational psychology: New resources, activities, partners, courses and markets.* Paper presented at the American Educational Research Association annual meeting, Montreal, Canada.

Bonk, C. J., & Cunningham, D. J. (1998). Searching for learner-centered, constructivist and sociocultural components of collaborative educational learning tools. In C. J. Bonk & K. S. King (Eds.), *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse* (pp. 25-50). Mahwah, NJ: Earlbaum.

Bonk, C. J., & Dennen, V. P. (in press). Teaching on the Web: With a little help from my pedagogical friends. *Journal of Computing in Higher Education.*

Cummings, J. A., Bonk, C. J., & Jacobs, B. (1999). *Twenty-first century syllabi: Dynamic tools for promoting interactivity.* Unpublished manuscript, Indiana University at Bloomington.

Duffy, T. M., Dueber, B., & Hawley, C. L. (1998). Critical thinking in a distributed environment: A pedagogical base for the design of conferencing systems. In C. J. Bonk & K. S. King (Eds.), *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse* (pp.51-78). Mahwah, NJ: Earlbaum.

Harasim, L., Hiltz, S. R., Teles, L., & Turoff, M. (1995) *Learning networks: A field guide to teaching and learning online.* Cambridge, MA: MIT Press.

Jonassen, D., Davidson, M., Collins, M., Campbell, J., & Haag, B. B. (1995). Constructivism and computer-mediated communication in distance education. *The American Journal of Distance Education, 9*(2), 7-26.

Biographical Sketches

Curt Bonk is an associate professor in the Learning, Cognition, and Instruction Program within the Department of Counseling and Educational Psychology at Indiana University. Currently, he is a Faculty Fellow for Research at the Center for Excellence in Education, as well as a core member of the Center for Research on Learning and Technology located in the School of Education at Indiana University. As a former corporate controller and CPA, Curt is interested in enhancing college and K-12 pedagogy with technological supports, scaffolded instruction, and alternative instructional strategies which he seldom observed in business school. His other professional interests include nontraditional learning and distance education, in a social context, social cognition, and collaborative writing technologies. Curt directed or guided many of the research projects on electronic collaboration reported in his edited book: *Electronic Collaborators:*

Learner-Centered Technologies for Literacy, Apprenticeship, and Discourse and is currently teleapprenticing hundreds of preservice teachers on the World Wide Web. Most recently, he was technology contributor for the 9th edition of Houghton Mifflin's educational psychology textbook, *Psychology Applied to Teaching* by Jack Snowman and Robert Biehler. Curt holds a Ph.D. and M.S. in educational psychology from the University of Wisconsin-Madison, and a B.A. in accounting from the University of Wisconsin-Whitewater.

Address: Indiana University
School of Education: Room 4022
Dept. of Counseling and Educational Psychology
Bloomington, IN 47405-1006
E-mail: CJBonk@indiana.edu
URL: http://php.indiana.edu/~cjbonk
Phone: (812) 856-8353
Fax: (812) 856-8333

Vanessa Dennen is a Ph.D. candidate in Instructional Systems Technology at Indiana University and a visiting assistant professor at State University of New York – University at Buffalo. She teaches both traditional and distance education courses, with extensive use of Web-based conferencing in both formats. Her research interests include computer-mediated communication patterns, and the design of Web-based learning environments. Vanessa is the Director of the Radio-Television-Film Division of the National High School Institute at Northwestern University. She holds an MS in Educational Psychology from Indiana University and an MS in Instructional Design, Development and Evaluation from Syracuse University.

Address: IST Department
Indiana University
School of Education
Bloomington, IN 47405-1006
E-mail: vdennen@indiana.edu
URL: http://php.indiana.edu/~vdennen

Creative Use of the Web to Support a National Video Satellite

Mary Brintnall-Peterson, Ph.D.
Program Specialist in Aging
University of Wisconsin-Extension

Joy First
Instructional Design Specialist
University of Wisconsin-Extension

Introduction

In January 1999, 234 site facilitators hosted the national satellite program, Grandparents Raising Grandchildren, with more than 3,500 participants. The satellite program was sponsored by the University of Wisconsin–Extension, the Purdue Cooperative Extension Service, and the American Association of Retired Persons, along with a grant from the Intergenerational Special Interest Group, National Network for Family Resiliency (NNFR). NNFR is funded by the Youth and Families Network of the Cooperative State Research, Education & Extension Service (CSREES). The Intergenerational Special Interest Group decided to provide an educational program using distance education technology so that the program could be accessed throughout the United States, reaching a large audience while being cost effective.

Gibson and Gibson (1997) suggested that instruction-using technology is useful because it is more time effective, cost effective and can reach a large number of diverse participants. Because videoconference technology brings education to the participants, it is efficient and affordable (Levine, 1996; McKenna, 1995). In addition, videoconferences can be recorded for viewing at a later time, allowing participants to learn the material at their own pace (Anderson & Jensen, 1997) and on their own schedules (Gibson & Gibson). By using videoconference technology, a broad range of participants can be reached, including rural participants as well as urban participants. Today's learner is more accepting of technology as a viable medium for instruction and views it positively. Thus, a videoconference was selected as a viable option (Tomei, 1999; McHenry & Bozik, 1995).

Role of Local Facilitator

One goal of the Intergenerational Special Interest Group was to have the local University Extension staff provide leadership to the community by offering the satellite program. Leadership for this videoconference included seeking community partners to collaborate on promotion of the program, facilitating the videoconference, and collecting evaluation data.

The local site facilitator is the human link at the local level. Andy Lewis (1999) conducted a survey of participants in a distance education nonprofit management series and found that 93 % of those who responded to his survey felt the local facilitator added value to their learning experience. Jonassen, Davidson, Collins, Campbell, and Bannan Hagg (1995) believed the most valuable learning activity is the opportunity to build a community of scholars and practitioners through well-designed mediated instruction that moves the teacher from a podium to the sideline, from leader to coach, from purveyor of knowledge to facilitator of personal meaning making. They promoted the constructivist principles, which provide facilitators and learners the opportunity to build meaning, understanding, and relevant practice together. Through the use of a variety of distance education technologies, site facilitators can create a learning community. Our challenge was to develop support resources that enabled site facilitators to create a community of learners at the local level. Support resources enhanced the satellite program by expanding the total learning experience to include on-site activities, print materials, and before- or after learning opportunities (Greer & Ziebarth, 1994).

Decision to Develop Web Site to Support Video Satellite Program

Because many individuals who might be site facilitators had little or no experience as facilitators, yet would have a critical role in facilitation, marketing and evaluating the program, we recognized the need to provide training. Since it was impossible to provide face-to-face training, send numerous mailings, or utilize other traditional communication methods, a communication method was needed that would provide economical and accessible training for site facilitators. We explored the potential of the World Wide Web and found some information on Web courses, but nothing specific to supporting a satellite program through the Web.

We suspected that professionals in education and human services would have access to the Internet or that there would be a local resource (school, library, Extension office, county agency, etc.) in a community that would have Internet access. Findings in a recently released study by Hughes, Joo, Zentall, & Ulishney (1999) indicated that a large percentage of human service providers have access to computers, though few of them use E-mail and even fewer used the World Wide Web. Nevertheless, they strongly endorsed the use of information technology in their work. Lewis (1999) found that only 38% of the participants used Web-based resources, but 96% of those who used them found them to be helpful.

Past experience with other satellite programs demonstrated that site facilitators would utilize information if it were easy to use, what they needed, and required little of their time. These past experiences were reinforced by the work of Lippert, Plank, Camberato, and Chastain (1998), which indicated that the advantages of Web-based courses are greater flexibility, expanded access to resources, and allowance for constant personal interaction between students and instructors. Using past experience and knowledge from current research from Web-based courses, we began the process of developing our Web site.

The Web site was our main communication and training source for site facilitators. Site facilitators were supported by information on the videoconference Web site, E-mail messages, training via the Educational Telephone Network (through phone system), and personal telephone conversations.

Description of the Web Site

In designing the Web site, we adapted adult education principals to the Web. Remmers (1999) stated that the Web can be cost effective and beneficial to educational professionals when they need continuous access to information, tools, advice, and /or training so they can complete their work responsibilities, when they need to provide information to professionals in the same organization or across organizations. He suggested that each page be organized in sequential order and designed so students can go through the content as they choose and in any order they choose. Remmer's work reinforced that the Web site should be flexible and easy to access. He further stated that a Web site is functional when it contains correct information, when the pages are relevant for the task or situation, when it solves a stated problem or accomplishes an (un)expected payoff, and when no important artifacts are missing.

Several key decisions regarding Web design were made before the Web site was developed. The purpose of the Web site was to support site facilitators, especially those who had never facilitated a videoconference; a secondary audience was Web surfers, including potential participants. We also recognized that the Web site would evolve as the program developed. Various pieces of information were added, as needed by site facilitators to accomplish various roles and responsibilities. The first pieces on the Web were an overview description of the satellite program, Grandparents Raising Grandchildren: Implications for Professionals and Agencies, position descriptions for state contacts and local site facilitators, registration information, and a site facilitator guide. Pieces were modified continually as we received input from individuals who accessed it, received questions, and identified new information for site facilitators.

The completed Web site included (a) what's new on the Web; (b) marketing and promotional materials (brochures, posters, fact sheets, letters to potential participants, newsletter inserts, news releases, and public service announcements); (c) participant materials; (d) CEU (Certified Education Units) and professional development materials; (e) site facilitator's packet; (f) listing of registered sites; and (g) the national planning committee. The Web site can be found at: http:\\www.uwex.edu\ces\gprg\gprg.html

How the Web Site Was Used

A site facilitator evaluation was included in the site facilitator's packet to be completed at the end of the videoconference. Site facilitators were encouraged to complete the evaluation through E-mail. Evaluations were received from 190 (81 %) of the 235 site facilitators who hosted the national video satellite program. One hundred and three (54 %) completed the evaluations as an E-mail document, and 87 (46%) returned them through the mail. The evaluations revealed that 97% (182) of the site facilitators had downloaded materials off the Web. The top four items used the most by site facilitators also were identified as most helpful to them. The items identified were (a) the participants' materials, (b) site facilitator's packets, (c) promotion materials, and (d) the site facilitator's guide. The items least used by the site facilitators were information about the national advisory planning committee and the listing of registered sites.

One of the responsibilities of the site facilitator was to market and promote the program. Marketing and promotional materials used by site facilitators included brochures (81 %), letters to potential participants (65 %), and news releases (63 %). The least used marketing and promotional materials were newsletter inserts (21 %), the public service announcements (26%), and posters (27%).

Everyone involved agreed that the Web site was successful in meeting the educational needs of site facilitators. The Web site was beneficial to site facilitators because adult education and distance educational principles were used when designing it. Ninety-seven percent of our local site facilitators stated they would be willing to facilitate another satellite program. The following comments from site facilitators illustrate their satisfaction: "Congrats to the person who worked so hard to put on this videoconference. You were well organized and thought of everything." "The evaluation process through the computer was very user friendly and I look forward to the final impact statements with all the data." "You really had your act together, so it was a pleasure being involved."

How the Web Site Is Being Used Today

After the satellite program the Web site continued to be a communication linkage with local site facilitators. During the satellite program, more than 300 questions were received by fax. Site facilitators needed answers to these questions so the questions were grouped into various categories with answers. This need re-directed the focus of the Web site from a training and communication site for site facilitators to both an information site for grandparents raising grandchildren and the professionals who support them and the professionals who use the video tape for a local educational programming. It also supports individuals who purchase a copy of the video satellite program for educational program use. Twenty-four additional sites registered for the videoconference to have it as a resource for later use. The UW-Extension publications office has also sold more than 50 copies of the videoconference. We assume that individuals who are currently using the program still need the information on the Web to support them as a local site facilitator. Currently, we are uncertain of the long-term use of the Web site.

What We Learned and Recommend for Replication

Individuals involved with the Web site's development and management discussed what went well and what should be done differently the next time. We recommend separating the written pieces into several different groupings, including those with large graphics, those that need to be localized, and those that can be downloaded as they are. We would use the PDF format as much as possible. Our Web address was confusing because it had two gprgs in the title. We feel a simpler and shorter Web address would be easier for site facilitators to access the site. For site facilitators to input data into the participants' evaluation, they needed a password. We used Badgers as the password and found it created problems because it was in the plural form instead of singular. We suggest modifying the registration form by using larger spaces for information and to include payment methods and that if someone is paying by check, they not register on the Web. We also would create a data-base through the Web registration information so there was one source of information on each site that could be accessed by anyone who needed the information.

We underestimated the time needed to develop and support the Web site. Because we were developing the Web site, content of the satellite program, and the support materials all at the same time, we were putting information up "just in time" versus providing plenty of time for the site facilitators. We also found the need to change the outline of the home page of the Web site so it was more "user" friendly. Changes were made based on questions or recommendation from individuals who used the site. Replication of our Web site for other satellite programs should make it easier as the planners can start with what we have developed and modify it for the content of their program. There should also be fewer structural changes when using something already developed as opposed to starting from scratch. Even if planners replicate the structure of our Web site, they will need to allot time for modifications and changes to the Web as it evolves.

We felt the types and content of information placed on the Web was helpful and was used by the site facilitators. The only additional type of information we suggest for future satellite programs is information on the minimum equipment requirements, including a description of the satellite downlink, computer, printer, and Internet access, and the need for E-mail access.

Summary

The web is a viable communication-training vehicle for local site facilitators. It allows site facilitators to access the information they need when they need it and to complete their roles and responsibilities as a site facilitator. It is cost effective, accessible, and allows for continual opportunities for communication and training. Site facilitators were satisfied with using the Web, were able to access the information they needed, and agreed to be a site facilitator for future programs.

References

Anderson, A., & Jensen, E. A. (1997). Delivering statewide computer training via satellite. *Proceedings of the 13th Annual Conference on Distance Teaching and Learning: Competition, Connection, and Collaboration*. Madison: University of Wisconsin System.

Gibson, C. C., & Gibson, T. L. (1997). Workshops at a distance. *New Directions for Adult and Continuing Education, 76*, 59-69.

Greer, E., & Ziebarth, A. (1994, December). Designing meaningful satellite programs: The many faces of homelessness project [8 sections]. *Journal of Extension, 32*(4). [Online serial]. Available: http://www.joe.org/joe/1994december/a2.html

Hughes, R., Joo, E., Zentall, S. R., & Ulishney, K. (1999). Information, technology, and human services. *HDFL Bulletin- Feature*. Available: hdfl-bulletin@ag.ohio-state.edu

Jonassen, D., Davidson, M., Collins, M., Campbell, J., & Bannan Haag, B. (1995). Constructivism and computer-mediated communication in distance education. *The American Journal of Distance Education, 9*, 7-25.

Lewis, A. (1999). *The site facilitation factor*. Unpublished Manuscript. Madison, WI: Learning Institute for Nonprofit Organizations.

Levine, B. J. (1996). Developing interactive satellite videoconferences for professional development. *Proceedings of the 12th Annual Conference on Distance Teaching and Learning: Designing for active Learning*. Madison: University of Wisconsin System.

Lippert, R. M., Plank, O., Camberato, J., & Chastain, J. (1998). Regional extension in-service training via the internet [7 sections]. *Journal of Extension, 36*(1). [Online serial] Available: http://www.joe.org/joe/1998february/a3.html

McHenry, L., & Bozik, M. (1995). Communicating at a distance: A study of interaction in a distance education classroom. *Communication Education, 44*, 362-371.

McKenna, S. (1995). *Evaluating IMM: issues for researchers* [Online]. Available: http://www.csu.edu.au/division/oli/oli-rd/occpap17/eval.htm

Remmers, E. (1999). *Guidelines for WWW-based support environments for education professionals* [Online]. Available: http://mw75.students.utwente.nl/~elka/litstudy/

Tomei, L. A. (1999). *Concentration and infusion: Two approaches for teaching technology for lifelong learners* [Online]. Available: http://www.thejournal.com/magazine/99/apr/feat03.html

Biographical Sketches

Mary Brintnall-Peterson is a professor with the University of Wisconsin-Extension. In her position as a Program Specialist in Aging, she works cooperatively with other faculty, agency, and organizational representatives to develop educational materials on subjects related to older adults. Her current emphasis is on caregiving, intergenerational relationships, grandparenting, and grandparents raising grandchildren. She received her Ph.D. from the University of Wisconsin-Madison in 1995, her master's in Adult Education from the University of Wisconsin-Milwaukee, and her undergraduate degree in Home Economics Education from the University of Wisconsin-Stout.

Address: 428 Lowell Hall
610 Langdon Street
Madison, WI 53703-1195
E-mail: mary.brintnall-peterson@ces.uwex.edu
Phone: (608) 262-8083
Fax: (608) 263-7969

Joy First is an Instruction Design Specialist with the University of Wisconsin-Extension. She received a master's degree in Continuing and Vocational Education from the University of

Wisconsin-Madison in 1993. She has been with the Extension since 1995. Her current focus is in the development and management of on-line teaching and learning resources.

Address: 428 Lowell Hall
610 Langdon Street
Madison, WI 53703-1195
E-mail: jafirst@facstaff.wisc.edu
Phone: (608) 265-3232
Fax: (608) 263-7969

Instructional Technology Decisions: Designed for Learning
or
WWWWWWW (Whew!): Why We Went With the World Wide Web

Eugenia D. Conway, M.A., Assistant Director for Faculty Development
Center for Educational Development
New Mexico State University

Thomas E. Cyrs, Ed.D., Professor Emeritus
Center for Educational Development
New Mexico State University
and
President, Educational Development Associates

John P. Shonk, M.Acct., Research Associate
Center for Educational Development
New Mexico State University

Abstract

Technology has traditionally driven the way instructors teach and students learn in a distance learning environment: A technological solution is adopted by an institution and the problems of distance learning courses are transported to the pre-selected solution, such as ITV, WWW, or audioconference. All too often, the problem for which the solution is selected goes undefined. As the cost of technology drops, more delivery options are becoming available. Given the increased choices of delivery technology, how does the instructor and the institution choose the technologies most appropriate for delivering distance learning courses? This paper will introduce a six-step decision matrix for selecting delivery technologies based upon learning outcomes and teaching strategies that was applied to a graduate level course on distance learning for instructors. *GS591: Design of Distance Learning Courses with the Merging Technologies* was analyzed for its requirements based on: (a) The student population, the terminal learning performance objectives, and the domains and levels of learning; (b) Appropriate learning activities to achieve the learning objectives; (c) Teaching strategies chosen to facilitate the desired learning outcomes; (d) Expected geographical distribution of students and student level of access to various technologies; (e) Technical aspects of the course, including amount of interactivity and visualization, cost and training needs, and time, support, and inventory available; and (f) Selection of appropriate delivery technology(ies). Using this six-step model to analyze traditional courses will yield a basis for choosing one or more delivery technologies to appropriately support the desired learning outcomes.

The Learning Driven Delivery Technology Selection Matrix Applied to GS591

GS591: Design of Distance Learning Courses with the Merging Technologies is a graduate level course on the pedagogy of teaching and learning at a distance that is offered to students with one or more years of teaching or training experience.

Step One: Identify the Primary Domain and Level of Cognitive Learning

The primary domain of learning for GS591 is the affective domain. The course is designed to allow students to investigate areas of personal interest within the field of distance learning through the negotiation and execution of two learning contracts*. It is hoped that students will choose to apply the principles and practices introduced in GS591 to their own distance learning courses.

Affective objectives. The student will (a) given the opportunity to select two topics within the context of distance learning, design two learning contracts to master these topics; (b) express a willingness to seek further information on distance learning and teach a telecourse within one year; and (c) choose to complete at least five self-tests to determine the level of cognitive mastery of the distance learning course materials.

Cognitive objectives and level of learning. The student will (a) apply the *Learning Driven Delivery Technology Decision Matrix* to a course that they intend to teach at a distance within the next year and select the most appropriate delivery technology combinations based on availability and learning outcomes (Level 4-critical thinking); (b) explain how teaching at a distance differs from traditional teaching and new areas of teaching competence that will have to be developed; (c) explain the research conclusions that have been reached relative to distance education (Level 2-comprehension); (d) construct examples of word pictures and visual analogies to be used within one lesson of their telecourse (Level 3-application); and (d) construct a telelesson plan and interactive study guide for use with the selected delivery technologies (Level 4-critical thinking).

Summary of step one. Students are experienced teachers/trainers. The primary domain of learning is affective. Cognitive levels of learning range from Level 2 (comprehension) through Level 4 (critical thinking). Much of the content of this course is simple information transfer. However, several of the course objectives have a visual component that must be accommodated.

Step Two: Select Alternative Learning Activities

Learning activities are identified that effectively promote the desired learning outcomes specified in Step One. Activities can be classified into broad categories including reading, writing, listening, visualizing, speaking, and touching or doing. An analysis of the learning activities employed in GS591 include:

Reading. Required reading includes most of the chapters of the course text: *Teaching at a Distance with the Merging Technologies: An Instructional Systems Approach* (1997) by Cyrs with Conway. Additional reading material is made available to students on the World Wide Web in the form of PDF documents, HTML documents, and/or URL links. A suggested sequence of reading is outlined. However, students can read in any sequence.

Students must also read comments posted by their peers in course discussions, both synchronously and asynchronously.

Writing. Each student is required to write two learning contracts-one individual contract and one contract in collaboration with one or more other students. The product of the learning contract may be a traditional paper, a telelesson plan, a short video production, a review of research, web site reviews, the creation of a web site, or any project within the realm of distance education that is acceptable to the student and the instructor. The contracts are submitted via e-mail, e-mail attachment, WWW, fax, or the postal service, with preference given to e-mail and e-mail attachment.

Students are also required to write (type)/speak as they participate in course discussions.

Listening. Each student receives a two-hour VHS videotape produced by the instructors to address the elements in GS591 that require visualization with full motion video. A number of learning activities and exercises include segments of video. Students are required to listen reflectively to the video segment and post their reactions for class discussion.

One synchronous audioconference is conducted with a guest presenter to let the students experience this mode of communication. The topic is reconfiguration guidelines for interactive television. The presentation includes an interactive study guide.

Visualizing. The course text is heavily visualized with word pictures and clip art. Much of the video tape is similarly visualized using PowerPoint® to demonstrate procedures as well as usage of several visualization techniques, including word pictures and visual analogies. A PowerPoint® presentation is also available to describe the process of creating word pictures. Students use visualization techniques in the creation of a telelesson plan and interactive study guide. They may also use visualization techniques if they choose to create a web site as the means to present one or both of their learning contracts.

Speaking. Students are required to speak as they participate in a synchronous meeting via audioconferencing. They may also choose to contact a project partner via telephone or in a face-to-face meeting as paired/group projects are developed. Students are also required to speak/write as they participate in synchronous and asynchronous course discussions.

Touching/Doing: Though not a specified outcome of GS591, students may choose to use various hardware and software in completing their learning contracts.

Summary Step Two. The learning activities for GS591 are heavily concentrated in reading, writing/speaking, and visualizing. Touching and doing are incidental to the students' choice of learning contract. The most significant type of learning activity that must be addressed is visualization.

Step Three: Specify Teaching Strategies

Having determined the types of learning activities, appropriate teaching strategies are identified to facilitate those activities. Teaching strategies include, but are not limited to, lectures (non-interactive), interactive lectures, paired/team projects, individualized activities, drill and practice, and experiential learning activities. In addition, teaching strategies must be analyzed to determine if they must take place synchronously or if they can be effectively conducted asynchronously. Teaching strategies identified for GS591 include:

Interactive lecturettes. Several short, interactive lecturettes are included that demonstrate how this teaching technique can be designed for use in real or delayed time. Each lecturette has a correlated interactive study guide.

Teams/dyads. One of the two required learning contracts is negotiated and completed by teams of two or more students. Team members may communicate with the instructors and one another via several technologies in order to complete this learning contract.

Individualized activities. The two required learning contracts allow the student to address areas of personal interest within the scope of distance education. The learning performance objective(s), resources, means to achieve the objective(s), a proof of achievement (product), and the criteria required to assess the product are negotiated between the individual student and the instructor.

Experiential learning activities. Students may opt to include experiential activities within one or both learning contracts. Students may also choose to practice some of the presentation techniques detailed in this course.

Asynchronous strategies. Learning contracts, which are totally individualized, can be completed asynchronously. Videotaped lecturettes can be viewed at the convenience of the student. Course learning modules can be attempted and completed at will, though a set of course milestones is strongly suggested to help students manage their progress through the course and to keep course discussions from becoming too disconnected.

Synchronous strategies. One or more chat room meetings are scheduled that require attendance. One audioconference meeting has mandatory attendance in order to give students the experience of this often neglected medium.

Summary of step three. Most of the teaching strategies identified do not require a real-time meeting. Two or more synchronous meetings are scheduled to demonstrate particular technologies.

Step Four: Conduct a Student Analysis

Analysis of the expected student population is a critical step that is too often ignored. The problem that surfaces is that the institution and the instructor may have technical capabilities to produce materials that go far beyond the capabilities of the students to access. To design a course that is useful and accessible to the intended students, some critical information must be identified: (a) Where are the students located? Locally? Regionally? Within the state? Nationally? Internationally? (b) How many students will be allowed to enroll in the course? (c) How many sites will there be for the course? (d) To which technologies can the students be expected to have reasonable access? (e) What is the expected experience level of students in using hardware and software?

Student location. For the first iteration of GS591 delivered completely at a distance, students will be located within the service area of New Mexico State University, which realistically includes southern New Mexico and El Paso, Texas. In the future the location of GS591 students may be greatly expanded.

Number of students. Student enrollment is capped at 20. The expected level of student/instructor interactivity limits the number of students in this course.

Number of sites. The attempt with GS591 is to create an anytime, anywhere course. The number of sites may range up to 20 or more. Students may connect to the course from a number of different sites, including home, office, computer lab, or various travel locations.

Available student technology. Since the students enrolled in GS591 are professionals with at least one year of teaching experience, a reasonable level of access to technology is assumed. Minimum guidelines for hardware and software included a 486 PC or same-level Macintosh computer, access to the NMSU WebCT® server via direct dial-up or a stable Internet service provider using standard Java, and a Netscape web browser version 3.0 or later. Additionally, students within the targeted population for GS591 could reasonably be expected to have access to a VHS videocassette player and television monitor. However, one limiting factor is that the dial-up service available at no charge from NMSU operates only a 14.4 modem pool, a significant limitation on the speed of access available to NMSU students.

Student technical experience level. GS591 students, because of their professional backgrounds, can reasonably be expected to have basic skills with e-mail, one or more web browsers, one or more word processing software programs, and a presentation package such as Microsoft PowerPoint®, or similar. These technical expectations are included in the course syllabus.

Summary of step four. Students in GS591 could reasonably be expected to have access to the necessary technology needed to participate in this course. The major consideration identified is the very low speed of student access to the web-based elements of the course.

Step Five: Technical Analysis

The technical analysis of the course entails a review of the demands of the course in relationship to the technologies available to deliver the course to the students, including: (a) The level of expected interactivity allowed by each technology; (b) The ease of visualization for each of the technologies; (c) The cost of implementing delivery via each technology; (d) The expected level of instructor and student expertise with each technology; (e) Training considerations for both instructor and students for effective use of a technology; (f) The amount of time required to develop a course and the amount of time students need to complete the course; (g) The availability and extent of support services; and (h) An inventory of technologies actually available to the instructor and students.

Level of interactivity. The expected level of asynchronous interactivity via computer mediated communication is high. CMC will include course discussion, student/student dialogue, and student/instructor dialogue. Synchronous interactivity will include chat room sessions and an audioconference meeting. Some interpersonal interactivity may occur via postal service, fax, telephone, and voice mail. Interactivity will include negotiation of the two required learning contracts, resource recommendations, personal counseling, interface with course materials and media, and course discussions.

Ease of visualization. A significant amount of visualization is included in GS591 with the use of word pictures, visual analogies, and full motion lecturettes and demonstrations. Delivery mechanisms for the visual elements may include downloadable interactive study guides in PDF and/or HTML format; short video clips, animations, and demonstrations on videotape; and PowerPoint® presentations in HTML and video format. Creation of these visualizations ideally will take a minimum of instructor time, but realistically will be quite time consuming. Student use of these visualizations should be easy with a minimum of access time.

Cost. Student costs include purchase of hardware and software to meet the minimum technical requirements. Development costs may include purchase of additional software. These costs should be moderate. Institutional costs include purchase and maintenance of a WebCT® server and software and the hardware and software used by the instructors to generate course materials. These costs may be moderately high. Students may need to subscribe to Internet provider services or may opt to purchase faster access to University provided services. Instructor costs may include upgraded University provided services to allow access to the course from instructors' homes. These costs should be moderate.

Training. Students are expected to have a moderate familiarity with required hardware and software including the specified World Wide Web browser and word processing software. Training tapes are made available to students who may need or want training in PowerPoint®. On-line guides are available for using WebCT® as a student. Adequate time is built in to the beginning of the course to allow students to become accustomed to the WebCT® environment. Instructors went through a short course on WebCT® well in advance of offering GS591. Instructors are familiar with web browsers, word processing, e-mail, PowerPoint®, and several web authoring and graphics software packages.

Time. Development time for GS591 is high. A wide variety of materials was incorporated into the course, including a self-produced two-hour videotape, several interactive study guides, numerous HTML documents, and a high level of visualization throughout the course. Since the course is intended to be self-paced, all materials had to be available to the students from the beginning of the course. Students are still restricted by the traditional semester scheduling at NMSU. However, they can access the course at any time and progress through the course at their own pace within the semester time frame.

Support. The instructional team included instructional designers, a graphic artist, web specialist, presentation graphics specialist, television specialist, and editorial support. The entire course was produced in-house. Support available to students include registration guidance, on-line guides for using WebCT®, and limited technical support.

Inventory. Delivery technologies available to the instructors include one-way satellite video delivery, two-way compressed videoconferencing, videotape, web-based delivery both with and without an integrated distance learning environment (IDLE), telephone conferencing, e-mail, voice mail, fax, postal service, print, and face-to-face.

Step Six: Select Appropriate Delivery Technologies

Based on the analysis of the course, recommendations can be drawn as to the technology(ies) most suited and cost effective for meeting the learning performance objectives of the course. In the case of GS591, it was determined that while some critical components required full-motion video and extensive visualization, the bulk of the course materials and exercises could be managed at this point in time in a primarily print-based Web format. The course requires a means for students to interact with one another and the instructor and to access Web-based resources outside of the course materials. Furthermore, it was concluded that an asynchronous, anytime, anywhere mode of delivery would be desirable to accommodate the schedules of the intended student population. Web-based delivery within the context of an IDLE (WebCT®) presented the solution of choice, with those segments of the course requiring full motion video delivered via videotape and integrated with the web-based learning modules of this course.

Conclusion

Through a careful and considered evaluation of a course based on the desired learning outcomes, an informed decision can be made about the distance learning delivery technologies best suited for that particular course. Each course will carry differing demands for learning outcomes, learning activities, and teaching strategies. Combined with the availability and demands of time, cost, and training of technologies to instructors, and more importantly, to students, technology selection can be tailored to maximize the positive effects and minimize the negative effects of learning at a distance via the technologies.

*A learning contract is a formal written agreement between the student(s) and the instructor for the student(s) to complete a defined amount of work or to acquire a specific skill or set of skills within a specified amount of time and to a specified level of proficiency. It includes specifications for who will do the learning, what will be learned (the learning performance objectives), how the learning performance objectives will be acquired (the learning exercises and activities), what resources will be used to reach the learning performance objectives, evidence of achievement—a product or evidence that the specified level of proficiency has been attained, and criteria for the assessment and validation of the evidence.

Biographical Sketches

Eugenia D. (Jean) Conway is currently assistant director for faculty development for the Center for Educational Development at New Mexico State University in Las Cruces, New Mexico. She oversees the CED faculty development and instructional design programs. She coordinates and presents brown-bag teaching seminars aimed at enhancing faculty teaching skills and teaches a graduate-level distance education course, *GS591: Design of Distance Learning Courses with the Merging Technologies.* She presents seminars on distance education teaching techniques and visual thinking for faculty. Jean works with NMSU faculty to prepare presentation materials for both traditional teaching and teaching at a distance. She made significant contributions to *Teaching at a Distance with the Merging Technologies: An Instructional Systems Approach* by Tom Cyrs.

Address: Center for Educational Development MSC 3CED
New Mexico State University
P.O. Box 30001
Las Cruces NM 88003-8001
E-mail: econway@nmsu.edu
URL: www.nmsu.edu/~ced
Phone: (505) 646-2496
Fax: (505) 646-1330

Tom Cyrs is a highly sought after speaker and trainer in the fields of distance learning and college teaching. For the past 30 years, Tom has conducted hundreds of distance learning and college teaching workshops and presentations nationally and internationally. He is the 1995 recipient of the Mildred B. and Charles A. Wedemeyer Award for outstanding contributions to practitioners in the application of distance education in North America. Tom is the author of *Teaching at a Distance with the Merging Technologies: An Instructional Systems Approach.* Tom is Professor Emeritus of Educational Management and Development and Senior Faculty Advisor Emeritus for Teaching in the Center for Educational Development at New Mexico State University in Las Cruces, NM. Tom is a co-instructor for *GS591: Design of Distance Learning Courses with the Merging Technologies.*

Address: Center for Educational Development MSC 3CED
New Mexico State University
P.O. Box 30001
Las Cruces NM 88003-8001
Educational Development Associates
900 Conway Ave.
Las Cruces NM 88005
E-mail: tcyrs@nmsu.edu; edacyrs@zianet.com
URL: www.zianet.com/edacyrs/
Phone: CED: (505) 646-1019; EDA: (505) 523-9565
Fax: CED: (505) 646-1330; EDA: (505) 523-6179

John P. Shonk is a graduate research associate in the Center for Educational Development at New Mexico State University. He is responsible for planning, organizing, and coordinating international workshops on distance learning. He has edited two books, one on distance learning, *Teaching at a Distance with the Merging Technologies: An Instructional Systems Approach,* and one on traditional classroom teaching, *Essential Skills for College Teaching: An Instructional Systems Approach,* both by Tom Cyrs. John is a co-instructor for *GS591: Design of Distance Learning Courses with the Merging Technologies*. He has co-presented national and international workshops on distance learning.

Address: Center for Educational Development MSC 3CED
New Mexico State University
P.O. Box 30001
Las Cruces NM 88003-8001
E-mail: jshonk@nmsu.edu
URL: www.nmsu.edu/~ced
Phone: (505) 646-2299
Fax: (505) 646-1330

Challenges for Self-Directed Learning Within Distance Learning

Joan Hanor, Ph.D., Assistant Professor
California State University San Marcos
San Marcos, California

Robert J. Bulik, Ph.D., Assistant Professor
University of Texas Medical Branch
Galveston, Texas

Sherry Wulff, Associate Professor
Alverno College
Milwaukee, Wisconsin

Abstract

This interactive workshop addresses how self-directed learning strategies may support classroom teaching/training and learning in a networked world. Issues of self-directed learning will serve as our focal point for the sharing of case studies, an examination of current literature, and as a trigger for the discussion of implications for our respective programs of teacher education, faculty/professional development, and communication studies.

Key Words: control, interaction, distance learning, self-directed learning, literacy, teacher education, professional development, reflection, presence

The identification of more extensive and effective use of technology in the classroom, and for delivery of instruction at a distance has emerged across the spectrum of K-12, post secondary, and business educational settings. To meet the challenges posed within the unfamiliar landscape of the new frontier, teachers and learners need flexible instructional strategies and appropriate tools that not only support individual learning differences but also develop learning autonomy. This interactive workshop addresses how guided self-directed learning strategies support classroom teaching/training and learning in a networked world. Participants will develop criterion-based frameworks for designing "frontier hardy" instruction for their own unique educational or training settings. This workshop supports the following outcomes in which session participants will:

- investigate theoretical concepts that link self-directed learning and distance learning;
- identify criteria for creating an educational environment that enhances self-directed learning;
- within teams, apply criteria to the development of a template for self-directed learning through a distance learning medium;
- assess/self evaluate own learning within a self-directed learning framework;
- synthesize the workshop's content into a master framework that infuses and supports self-directed learning at the technology/pedagogy interface.

Workshop content has been organized in the following table to help articulate goals and processes. Our pedagogy as workshop presenters is informed by constructivist principles. As educators, we believe that knowledge does not pre-exist, but rather is constructed. The flow of workshop activities and events are structured to enable the meaningful construction of participants' collective understandings. The activities are used in combination to clarify the underlying complexity and the dynamic relationship of issues identified by both participants and workshop facilitators. Providing multiple representations using different presentation strategies connect and extend participants' mental models for working in a virtual / distance learning-oriented teaching environment.

Workshop Content

Focus	Format	Purpose
agenda & outcomes	presentation	situate this workshop within the context of the conference
issues	small group	identify issues associated with self-directed learning (SDL) and uses of technology
theoretical foundations	presentation	concepts, relationships and interface with technology: ❖ epistemology ❖ pedagogy as informed by constructivism ❖ self-directed learning as linked to distance or distributed education
curriculum examples and analysis of SDL	guided participant activity/1	criteria creation
SDL team framework development	guided participant activity/2	collaborative matrix development
SDL self- evaluation	guided participant activity/3	readiness for self-directed learning
SDL synthesis framework	facilitated group discussion	identifying common themes
workshop summary & evaluations	input	continuing connections, expanding frontiers, invitation

References

Note: Further references and resources will be provided as handout at the workshop.

Becker, D., & Dwyer, M. (1994). Using hypermedia to provide learner control. *Journal of Educational Multimedia and Hypermedia, 3*(2), 155-172.

Berge, Z. L. (1995). Facilitating computer conferencing: Recommendations from the field. *Educational Technology, 35*(1), 22-30.

Connelly, E. M., & Clandinin, D. J. (1988*). Teachers as curriculum planners: Narratives of experience*. New York: Teachers College Press.

Dillon, A., & Gabbard, R. (1998). Hypermedia as an educational technology: A review of the quantitative research literature on learner comprehension, control, and style. *Review of Educational Research, 68*(3), 322-349.

Dimitroff, A., & Wolfram, D. (1995). Searcher response in a hypertext-based bibliographic information retrieval system. *Journal of the American Society for Information Science, 46*(1), 22-29.

Eastmond, D., & Ziegahn, J. (1995). Instructional design for the online classroom. In Z. L. Berge & M.P. Collins (Eds.), *Computer mediated communication and the online classroom, volume three: Distance learning* (pp. 29-36). New Jersey: Hampton Press.

Gillingham, M. (1993). Effects of question complexity and reader strategies on adults' hypertext comprehension. *Journal of Research on Computing in Education, 26*(1), 1-15.

Knowles, M. S. (1975). *Self-directed learning*. New York: Association Press.

Hedberg, J. G., Brown, C., & Arrighi, M. (1997). Interactive multimedia and Web-based learning: Similarities and differences. In B. Khan (Ed.). *Web-based instruction*. Englewood Cliffs, NJ: Educational Technology Publications.

Hirschbuhl, J., Jackson, J., & Bishop, D. (1995*). Teaching at a distance: Student involvement through interactive multimedia*. Paper presented at the Eleventh Annual Conference on Teaching and Learning, Madison, WI.

Jonassen, D., Davidson, M., Collins, C., Campbell, J., & Haag, B. B. (1995). Constructivism and computer-mediated communication in distance education. *The American Journal of Distance Education, 9*(2), 7-26.

Laurillard, D. (1993). *Rethinking university teaching: A framework for the effective use of educational technology*. London: Routledge.

Littlejohn, S. W. (1999). *Theories of human communication* (6th ed.). Belmont, CA: Wadsworth.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* Cambridge: Cambridge University Press.

Olgren, C. (1998). Improving learning outcomes: The effects of learning strategies and motivation. In C. Gibson (Ed.), *Distance learners in higher education* (pp. 77-95). Madison, WI: Atwood Publishing.

Tyler, R. W. (1949). *Basic principles of curriculum and instruction.* Chicago: The University of Chicago Press.

Biographical Sketches

Joan Hanor, Ph.D., is an Assistant Professor in educational technology at California State University San Marcos. She most recently applied her expertise in distance learning technologies to the development of CalStateTEACH, an innovative field-based program for acquiring a California teaching credential. Her research and publications focus on the aesthetics of learning with technology and the important and often unrecognized role aesthetics play with issues of equity and diversity.

Address: College of Education
California State University San Marcos
San Marcos, CA 92096-0001
E-mail: jhanor@mailhost1.csusm.edu
Phone: (760) 750-4305
Fax: (760) 750-3237

Robert J. Bulik Ph.D. is an Assistant Professor at the University of Texas Medical Branch in the Office of Educational Development. His research and publications focus on Self-Directed Learning, faculty development, and distance education.

Address: University of Texas
Medical Branch
Office of Educational Development
Galveston, TX 77555
E-mail: rjbulik@utmb.edu
Phone: (760) 750-4305
Fax: (409) 772-4296

Sherry Wulff (dissertation near completion at UW-Madison) is an Associate Professor in the Professional Communication Department of Alverno College. Her research interests include the analysis communicative structures in pedagogy. She has published in the areas of assessment, media literacy, and critical reflections on distance learning.

Address: Professional Communication Department
Alverno College
3401 S. 39th Street
PO Box 343922
Milwaukee, WI 53234-3922
E-mail: sherry.wulff@alverno.edu
Phone: (414) 382-6395
Fax: (414) 382-6354

21st Century Curriculum Resources for Distance Learning

Carolyn Johnson, Information Librarian
Northwest Missouri State University

Pat McFarland, Reference Specialist
Northwest Missouri State University

Joyce Meldrem, Head Librarian for Collection Management
Northwest Missouri State University

Connie Ury, Library Outreach Coordinator
Northwest Missouri State University

One problem that educators face in the twenty-first century is locating and evaluating appropriate World Wide Web (hereafter Web) sources for distance education and online curriculum. Advanced use of search tools and systematic evaluation techniques will separate the educator who surfs the Web from the one who effectively integrates credible Web resources with the curriculum. Online educators must also be adept at preventing and detecting Internet plagiarism. [Note: All sites discussed in this paper are accessible at <http://www.nwmissouri.edu/library/pr/century/> (Johnson, McFarland, Meldrem, & Ury, 1999).]

Locating Resources

To begin learning about advanced online searching techniques, visit Owens Library's *Search Hut*. The *Search Hut* is an online tutorial using specific search elements to locate text, visual, or audio resources on the Web. Search elements include online search terms, phrases and punctuation; Boolean logic; and nesting of terms. The tutorial includes search examples, interactive quizzes and practice searches using the advanced search features of Alta Vista and Hotbot. Special features of these engines include: searching by the title of a web page; a piece or part of the URL; and limiting to the top level of a web site. The tutorial can be completed in a linear order by following arrow graphics or in a non-linear manner by jumping to a new section through hyperlinks that appear at the bottom of the screen. The *Search Hut* can be completed independently out of class, or in an electronic classroom.

Another model for locating resources employing limiting search techniques is available via Owens Library's *Search Engine Tips and Tricks* Web page. Librarians at Northwest Missouri State University maintain this resource by compiling information from the search engines' respective help pages. On this page, three full-text search engines are highlighted with specific features of each delineated in a chart. Users can learn focused search methods employing Boolean operators, phrase searching, truncation, nesting, and word proximity techniques. Advanced techniques are included for two of the search engines. The advanced techniques provide methods to search using very specific criteria including searching; searching by domains; searching for pages linked to a Web site; and searching for personal names.

A commercial model for locating resources is *Search Engine Watch* (Sullivan, 1999a), maintained by Danny Sullivan, a journalist and Web designer. This massive Web site includes resources for both Web designers and researchers. An extremely helpful section of the site is entitled "Search Engine Features for Searchers" (Sullivan, 1999b). Information regarding keystroke and text commands supported by specific search engines are arranged in table format for users to quickly scan and apply. Assistance in constructing finely honed searches using advanced techniques such as word stemming; selecting a range of dates; employing case sensitivity for proper names; and retrieving similar sites is provided for specifically identified search tools. Search engines that recognize Boolean operators; support nesting; and incorporate "near" searches are also identified.

Another resource available to enhance searching expertise is the Owens Library *Search for Specific Needs* page. This Web page links to resources that help users locate specific types of information. It provides links for search tools that identify street addresses & phone numbers, e-mail addresses, encyclopedias, mathematical and statistical information, images and sounds, quotations, and proper names. Web search mechanisms with sophisticated features are linked from this page, allowing users to locate reviewed Web sites; retrieve lists of sites ranked by relevancy; employ subject directories; and limit searches by date or domain type. The page also identifies resources that allow searchers to cast a wider net using meta-search engines that simultaneously retrieve results from multiple databases; limit search results to resources from a specific geographic region; and access information regarding Web history, ethics, and search engine mechanics.

Evaluating Resources

Once sites are located, the next step is evaluating Web resources. Each resource must be evaluated for author credibility; reliability of information presented; and the incorporation of valid sources and documentation. Unique considerations inherent in the evaluation of World Wide Web resources are available via the Owens Library *Research Tutorial*. The *Research Tutorial* provides a rubric for evaluating both print and Web resources. The rubric for evaluating Web resources is based upon collection development guidelines used for print sources and adds special guidelines for online materials.

Segments of the *Research Tutorial* include the following pages:

- *Evaluating World Wide Web Resources* furnishes users with a comparative table of general selection criteria for books, scholarly periodicals, magazines, indexes or database citations and Web resources.
- *Evaluating Author Credibility* (*WWW*) furnishes questions to ask when looking for an author's credentials including: (1) is their education or experience listed and (2) is it related to the subject matter? The probable locations of credentials are listed along with positive examples of pages that provide the author's credentials.
- The *Evaluating Contact Information (WWW)* Web page provides a guide for evaluating whether there is a mailing address, e-mail address or an institution or company sponsor; the location of such information on most credible pages; and positive examples of pages

that fit the criteria. The contact information further establishes the reliability or bias of a Web page.

- The *Evaluating WWW Documentation* guide examines whether the information provided is backed up by other resources in the form of a list of references, a bibliography or other documentation that can be checked. The location and type of documentation included is listed along with positive examples of pages that provide documentation.
- The *Evaluating the Purpose of Web Sites* page includes statements regarding why the page was created; the domain name of the page; the goals of the page; and positive examples of Web sites that meet the guidelines.

In addition to the *Research Tutorial*, the *Evaluating WWW Resources* Web page provides an overview of considerations for evaluating Web documents. This page describes the types of information readily available on the Web, as well as common assets and liabilities of these resources. Types of literature discussed include vanity publishing of personal and business pages; gray literature from professional associations and nonprofit organizations; scholarly papers authored by academics or technical works written by experts in a field of practice; and advertising and public relations literature available on commercial sites.

Assets of the Web for information access are demonstrated through representative sites linked from this page. Features highlighted include currency of resources, widespread access to ready reference materials; timely and interactive availability of information; instant access to additional information about subjects through lists of related hyperlinks; and the rapid exchange of information among scholars and experts.

Several liabilities of the Web are identified. Pages may rely on bells and whistles to cover lack of substantive information; search engines may provide misleading and unreliable relevancy ratings and abstracts; information about the authors' expertise can be difficult to locate or verify; documentation in the form of footnotes and/or bibliographic references is sometimes missing; and slanted or biased opinions are sometimes couched in attractive formats and unclear language.

A printable chart or rubric provides a succinct method for evaluating and comparing the assets and liabilities of Web resources. Educators may use the rubric as a class assignment to help students substantiate their rationale for citing a specific Web resource as credible and reliable.

Practice in critiquing a Web resource is highlighted on the *Evaluating Web Sites* page. This document emphasizes analytical questions using the **ADAPT** criteria (**A**uthority, **D**esign, **A**ccuracy, **P**urpose and **T**arget) and provides examples of positive, negative, and questionable resources. The strength of this method lies in the incorporation of sites that may be judged as either reliable or unreliable, dependent upon context. *Evaluating Web Sites* can be used in a class session about critical analysis of Web information or independently as a self-paced, self-directed tutorial. This method promotes critical thinking and allows practice of evaluation skills using a *Web Resource Evaluation* table to review five sites.

Evaluating Web Resources (Alexander & Tate, 1999) is a critical evaluation skills module developed by Jan Alexander and Marsha Tate, Reference Librarians at the Wolfgram Memorial Library of Widener University, Chester, Pennsylvania. The module includes evaluative checklists; PowerPoint presentations; and advocacy, business/marketing, informational, news, and personal web page examples. It provides access to other Web evaluation sites, and includes a bibliography of Web evaluation articles and books.

A final resource that aids educators in selecting Web resources is the Web page entitled *Evaluating Web Sites for Curriculum Use* (Owens, 1999), created by Andrea Owens, Library Media Specialist at Germantown Academy. This site proves guidelines for determining whether a resource is relevant, engaging, interactive, age-appropriate, credible, superior or equal to print sources, and well-written. Examples of pages that fit each of the criteria are included in the guidelines.

Annotations

Once material has been located, evaluated and is ready to be added to the curriculum, educators can enhance the quality of their course page by including descriptive and evaluative annotations of selected Web links. Elements of professional Web annotations identified in *Content Guidelines: Annotation Writing* include full sentence descriptions of key features on each page; keywords to facilitate the browsers' find command; identification of the page author, editor or sponsor; and consistent vocabulary.

Identifying and Preventing Plagiarism

Another challenge that distance and online educators face is plagiarism. Carolyn Johnson and Connie Ury have authored an article for the *National Teaching and Learning Forum* entitled "Detecting Internet Plagiarism" (Johnson & Ury, 1998). The article describes techniques for locating plagiarized text from proprietary database full-text periodical articles and Web term paper sites. The authors have a forthcoming article in the same periodical that discusses prevention of Internet plagiarism.

Conclusion

While many individuals worry that the Web will replace traditional sources, appropriate use of Web-based materials can enhance curricular content. Educators can preserve the reliability of information sources by incorporating focused search techniques, employing evaluative criteria when selecting online resources, and preventing or detecting plagiarism.

References

Alexander, J., & Tate, M. (1999, May 12). *Evaluating Web resources*. Wolfgram Memorial Library, Widener University [Online]. Available: http://www2.widener.edu/Wolfgram-Memorial-Library/webeval.htm [1999, June 15].

Johnson, C., McFarland, P., Meldrem, J., & Ury, C. (1999, June). *21st century curriculum resources for distance learning.* Owens Library, Northwest Missouri State University [Online]. Available: http://www.nwmissouri.edu/library/pr/century/ [1999, June 15].

Johnson, C., & Ury, C. (1998). *Detecting Internet plagiarism.* Published by Oryx Press in conjunction with James Rhem & Associates, Inc. [Online]. Available: http://cstl.syr.edu/CSTL/v7n4/web.htm

Owens, A. (1999, Spring). *Evaluating Web sites for curriculum use.* Germantown Academy [Online]. Available: http://www.ga.k12.pa.us/academics/US/library/Internet/Evaluation/teacher.htm [1999, June 15].

Sullivan, D. (1999a). *Search engine watch.* internet.com [Online]. Available: http://searchenginewatch.com/ [1999, June 15].

Sullivan, D. (1999b). *Search engine features for searchers.* internet.com [Online]. Available: http://searchenginewatch.com/facts/ataglance.html [1999, June 15].

Biographical Sketches

Carolyn Johnson, Information Librarian, selects library materials in the sciences, coordinates and teaches upper level and graduate library instruction, provides reference services, and develops Web resources for Owens Library. She serves on the Advisory Committee of Northwest's *Center for Information Technology in Education (CITE)* and is co-teaching a 1999 summer course on Web-based Instruction with a campus colleague from the Computer Science/Information Systems department. She was a 1999 judge of a student Web page contest for the Consortium for Computing in Small Colleges (Central Plains Region) Conference.

Address: Northwest Missouri State University
800 University Drive
Maryville, MO 64468
E-mail: carolyn@mail.nwmissouri.edu
URL: http://www.nwmissouri.edu/library/
Phone: (660) 562-1?93
Fax: (660) 562-2153

Pat McFarland, Reference Specialist, teaches high school and freshmen library instruction, provides reference services, and develops Web resources. She is an instructor for Freshman Seminar and an active member of Northwest's Freshman Seminar Advisory and Advantage Week Planning Committees. She has given presentations at national and regional conferences on non-traditional students, customer service, and team environments.

Address: Northwest Missouri State University
800 University Drive
Maryville, MO 64468

E-mail: pjp@mail.nwmissouri.edu
URL: http://www.nwmissouri.edu/library/
Phone: (660) 562-1669
Fax: (660) 562-2153

Joyce Meldrem, Head Librarian for Collection Management, selects library materials in business, teaches upper level and graduate library instruction sessions, provides reference services, and develops Web resources. She is a member of the Owens Library management team and serves on Northwest's Distance Education Committee. She has given presentations at national and regional conferences on customer service and team environments.

Address: Northwest Missouri State University
800 University Drive
Maryville, MO 64468
E-mail: meldrem@mail.nwmissouri.edu
URL: http://www.nwmissouri.edu/library/
Phone: (660) 562-1393
Fax: (660) 562-2153

Connie Ury, Library Outreach Coordinator, coordinates and teaches freshmen and general education library instruction, teaches upper level library instruction, and develops Web resources. She has given presentations at national and regional conferences on converting traditional curriculum to Web-based modules, integration of information literacy, online assessment, choosing authoritative Web sources, and Web research guides that interface print and electronic sources.

Address: Northwest Missouri State University
800 University Drive
Maryville, MO 64468
E-mail: cjury@mail.nwmissouri.edu
URL: http://www.nwmissouri.edu/library/
Phone: (660) 562-1669
Fax: (660) 562-2153

Navigating the Murky Waters of Web Conferencing Software: A "Consumers Reports" Approach to Evaluating the Options

Nancy Levenburg, Visiting Instructor
UCLA, California State University – Hayward
Department of Marketing, Grand Valley State University

Introduction

Over seventy Web conferencing, course authoring and "courseware" software alternatives are available in the marketplace today. This makes technology decision making with respect to online classes a complicated matter, indeed. Given that so many different types of systems exist, ranging from Internet interfaces to privately customized software with direct dial access, what criteria should online instructors and administrators used to evaluate the options? This paper presents (a) a simple three-attribute framework for sorting software alternatives into relevant categories; (b) an overview/introduction to "must have" features versus "bells and whistles"; (c) a discussion focused on the most popular alternatives and their characteristics, strengths and weaknesses.

As with any new technology, we must remember that technology is strictly a tool that can be used in the delivery of learning. The three critical components in the online model are the students, the instructor(s) and the curriculum (or content). Online learning technologies simply provide the "glue" that bind those components; their basic function is to enable students to access course materials and to communicate with the instructor and each other, as effortlessly and seamlessly as possible. Given this, two factors that will be critical to the success of any online learning program are

- User-friendly student interface
- Reliable and available system.

Plain and simply, students (and teachers) must be able to get online and use the software as intended. If the technology is not reliable and easy to use, the system will fail.

A Framework for Sorting Software

There are three fundamental characteristics that can be used to sort Web conferencing software and course authoring software alternatives. These three characteristics are

- Browser-based (Web) versus non-browser-based
- In-house versus Outsourced
- Asynchronous/Synchronous

The majority of online courses can be accessed only via the Internet and so they are "browser-based". On the positive side of things, having a Web-based course is very "hot." Examples include Web Course in a Box, WebBoard, TopClass and WebCT, to name a few. On the "con" side of Web-based courses, few learners (who primarily access their course/training site from home) have two telephone lines. Therefore, if they dial in to their course via their sole home telephone line, any incoming callers will be greeted by a busy signal. This can be extremely aggravating for family members and friends if the lone telephone line is tied up for long periods of time.

Non-browser-based softwares are very few in numbers. Convene's latest version offers non-browser-based 1-800 direct dial access, along with Web-based access (the user can choose). Non-browser-based softwares encourage participation by learners (and faculty) who live in more remote areas and may not have a local Internet provider, or for users for whom telephone charges accrue on a per-minute basis.

When educational institutions provide the program (including the server), the term we will use is "in-house." As an alternative, this structure can be provided through the software provider, or "outsourced". According to Bedore et. al (1998), "a general setup figure for the purchase of servers, computers, phone lines, and modems [in-house alternative] is approximately $25,000. If the institution chooses to use a software provider's system, the cost can be between $7 and $25 per participant, per month (including an 800 direct dial access number)." Lotus LearningSpace, WebCT, TopClass, and Web Course in a Box, as examples, are all examples of programs hosted in-house. Outsourced alternatives include: RealEducation (Web-based), Embanet (Web-based) and Convene.

Finally, a third way to sort alternatives is by the presence (or absence) of various types of real-time, or synchronous, communications, such as "chat rooms," voice-based teleconferencing and video conferencing. Some faculty members—especially those who have not previously taken or taught an online course—feel that synchronous capabilities are essential in an online program. On the other hand, many "experienced" online students and faculty consider chat to be a waste of time. (Chat can also be very difficult to implement. As one example, in one UCLA course the author taught, enrolled students ranged geographically from California to Bulgaria. As a result, simply being able to find a mutually convenient time to chat would be next to impossible.) Nevertheless, RealEducation and Embanet, as two examples, offer chat capabilities. Web Course in a Box and WebBoard do not.

Other Features

Other features that can be used to evaluate/rate alternatives include the following:

- Availability of HelpDesk/user support. Ideally, this should be available twenty-four hours per day, seven days a week. Users should be able to access this via either e-mail or telephone, preferably a 1-800 number.
- Faculty training . . . is it offered? What level of knowledge/skills will faculty be required to have? UCLA, for example, offers an instructor-led online training program for its online instructors using Embanet. RealEducation offers printed (online) instructions for using their system; it also requires that instructors have some knowledge of HTML. Given that faculty training in some form is a "must," who will provide it?

- Learner orientation . . . is it offered? Who leads it? How long does it last? How will learners gain an understanding of mechanical issues, such as sending and receiving messages? How will they learn success strategies for learning in an online environment?
- Separate conferences for broad subject areas... regardless of what it is termed (e.g., "conferences," "folders," "meetings"), most conferencing systems offer this.
- Threaded discussions . . . is it offered? How are discussions threaded? Can learners post "new" messages, or can they only respond to messages posted by the instructor (e.g., RealEducation)?
- New mail . . . is it highlighted or "flagged" in some way? Softwares that do not highlight/flag new messages require that everyone keeps track of login dates and times.
- Group and personal communications . . . can the students and teacher communicate both publicly and privately with each other? How convenient is it?
- Replying to messages . . . can portions of messages be replied to, or only whole messages?
- Users' hardware requirements . . . does the software work on all platforms (Unix, Windows and Macintosh)? Does it accommodate varying modem speeds?
- How quickly can learners complete the login process? How quickly can they access messages? According to Woolley (1996), "Frequently used functions such as advancing to the next message should require only one keypress or pointer-click and should happen instantly when selected. If the system is slow or cumbersome, people simply won't use it much." Thomas Nolan, a student enrolled in EDUI 6701, an online class, during the 1999 spring session at California State University-Hayward, used a stopwatch to time his access to the discussion areas in both RealEducation and WebCT from his computer at home. "From the moment I clicked on the bookmarked URL for each of the programs, it took 1:50 to get through the passwords and into the WebCT discussion forum; and it took a full 4:00 to get to this discussion forum in RealEd. Adding insult to it all, if I quit RealEd, I have to go through the entire loading sequence again from the very beginning, taking another full 4 minutes. Whereas in WebCT, once I'm in the program, I can quit and re-enter without going back to the beginning—provided that I don't quit the browser."
- Password and username security . . . most providers offer this.
- Price . . . can range from free to several thousand dollars.

Bells and Whistles

Other features that may be desirable include the following:

- Framed versus non-framed formats . . . are non-framed formats available? This may be important to visually-impaired learners and teachers.
- Course management tools and student progress tracking tools . . . are they available? (Are they needed?)
- Whiteboard and application sharing features
- Searching capabilities . . . can the user search for messages by date, author, or keywords?
- Timed quizzes . . . are they available?

Summary

Selection of a Web conferencing product can be a very difficult decision. It requires thoughtfully considering institutional and system objectives and requirements, analyzing users' existing hard- and software, users' capabilities, and specifying any technology requirements that may be needed to assess learners' attainment of learning outcomes. In a manner similar to buying a new automobile, it *is* possible to navigate the murky waters by specifying evaluative criteria (e.g., sports car versus minivan, manual versus automatic transmission), making comparisons, and judging the merits of competing options. Of course, just as in purchasing a new automobile, it is always advisable to do a "test drive" first. Fortunately, most Web conferencing softwares offer free demonstrations via the Internet. By using this methodical approach and considering what features are needed to accomplish desired objectives (and their corresponding level of importance), the list of seventy can probably be whittled down to just a few candidates.

References

Bedore, G. L., Bedore, M. R., & Bedore, Jr., G. L. (1998). *Online education: The future is now* (2nd ed.) Phoenix, AZ: Socrates Distance Learning Technologies Group.

Nolan, T. (1999). Private communication in EDUI 6701. *Introduction to on-line teaching and learning*. California State University-Hayward.

Woolley, D. R. (1996, November). *Choosing Web conferencing software*. [Online.] Available at: http://www.freenet.msp.mn.us/%7Edrwool/wcchoice.html.

Note: Links to sites containing evaluations of Web conferencing systems can be found under the "Resources" at Distance Learning Dynamics' Web site at: http://www.dldynamics.com.

Biographical Sketch

Nancy Levenburg is a Visiting Instructor at California State University (Hayward) and University of California, Los Angeles (UCLA), teaching courses for each via the Internet. She is also a Visiting Professor of Marketing at Grand Valley State University in Grand Rapids, Michigan, and a partner in Distance Learning Dynamics, a distance learning consulting and training firm located in Battle Creek, Michigan.

Address: Department of Marketing
Grand Valley State University
L.V. Eberhard Center, Suite 718
301 W. Fulton Street
Grand Rapids, MI 49504
E-mail: levenbun@gvsu.edu
URL: http://www.dldynamics.com
Phone: (616) 771-6811
Fax: (616) 458-3872

But We Don't Have a Million Dollars! Providing Distance Learning Library Services With Limited Budget and Personnel

Sharon Naylor, Education Librarian
Milner Library, Illinois State University

Lisa Janicke Hinchliffe, Library Instruction Coordinator
Milner Library, Illinois State University

Introduction

Not all librarians and library administrators have institutional or financial support for providing library services to distance learners. Library services are frequently an after-thought in many campus-level planning and implementation initiatives, with no recognition that special accommodations will be necessary. When faced with such situations, librarians must assume a leadership role both at the campus level and within their libraries. By becoming advocates for distance education and introducing even modest initiatives, librarians can provide some services to distance learners while laying the groundwork for implementing larger, adequately funded programs.

Expectations

Library service is perhaps the academic service that is most integral to the curriculum of a college or university. For some courses, removing access to library resources impairs learning immensely and completely changes the nature of the course in question. According to the *ACRL Guidelines for Distance Learning Library Services*:

> Access to adequate library services and resources is essential for the attainment of superior academic skills in post-secondary education . . . Members of the distance learning community are entitled to library services and resources equivalent to those provided for students and faculty in traditional campus settings.

Campus faculty and administrators may assume that the library will provide services and resources, regardless of whether adequate funding and personnel have been made available. Librarians and library administrators who are aware of such assumptions and their implications will recognize the importance of addressing them and, when feasible, providing resources and services or, when currently not feasible, implementing strategies to provide needed resources and services as soon as possible.

Strategies for Developing Services and Resources

Librarians and library administrators who suddenly find themselves thrust into a situation where they will be serving distance education students should use multiple strategies for developing and implementing services and for making resources available.

Educate Yourself

Like the majority of educators, most librarians have had little or no experience with distance education, and even fewer will have had experience providing distance education library services. Building an understanding of distance education issues through background reading will provide a foundation for planning and implementing library services. By becoming familiar with pedagogical and related issues, librarians will be able to communicate and work with teaching faculty. By becoming familiar with the technologies, librarians will be able to communicate and work with the technical support staff and instructional designers. By learning how large, established distance learning library service programs that have "two million dollars" operate, librarians can identify elements which might be implemented on a smaller scale.

Numerous websites related to distance education are available, and listservs and conferences provide a way to network with others who may be in similar situations. Professional organizations, such as the American Library Association, include relevant committees and forums. Familiarity with the *ACRL Guidelines* is imperative for all academic librarians. Librarians should also identify guidelines from accrediting agencies and other relevant guideline statements. (A list of recommended resources is online at http://www.mlb.ilstu.edu/ressubj/subject/educat/dislib.htm)

Assess Your Situation

Gathering information about specific institutional situations is particularly important. Even an informal needs assessment will be useful for planning purposes. Librarians should find out how many courses are being taught through distance education at their institutions and approximately how many students are enrolled in these courses and how many faculty are teaching. In some universities, distance education may be limited primarily to certain schools or disciplines.

The more information a librarian can gather about the distance education circumstances, the better for planning. Find out as much as possible about who the distance learners are. Are they enrolled in undergraduate or graduate courses? What technology skills do they have? What level of library skills do they have? Find out as much as possible about how the distance education program is being run. Is there a centralized office? Who makes the decisions about what courses are taught? Who is providing the direction and vision for distance education? Is the library involved in any way? Who provides the technology support? Essentially, the question is: Who are the "key players"?

Librarians should also assess how many students commute to on-campus classes because these learners, particularly if they are part-time students, share many of the same needs as those taking courses through distance education.

Identify Existing Resources

Existing resources and services may already serve distance learners or could easily be adapted to begin doing so. Start by determining what can currently be provided. Most campuses will probably already subscribe to some services that can be accessed remotely. Electronic resources should clearly indicate what is available to remote users and access procedures. In some cases, access may be fairly straightforward. In other situations, users may need special authorization numbers and passwords.

Many libraries also participate in various consortial, regional, or inter-institutional agreements. Determine if existing agreements provide access to services or resources for distance learners.

Set Realistic Short-Term Goals

Librarians should begin by focusing on what can reasonably be accomplished in the near future while keeping the loftier national guidelines as long-term goals. Networking on campus, establishing a timeline, identifying needed resources, updating existing or creating new handouts and websites, identifying funding or grant sources, and initiating contact with students are all worthwhile activities as starting points that can lead to other more ambitious initiatives.

Incorporate Distance Education Into Existing Policies and Procedures

Librarians and library administrators should consider distance education in all phases of decision making. For example, libraries provide reference service. How can libraries provide reference service to the distance learner? Librarians build library collections. How can librarians build collections that can be accessed remotely? Librarians provide library instruction. How can library instruction be provided to someone off-campus? Any time a service is added, ask if this service will accommodate the distance user. Any time an existing handout or webpage is updated, update with the distance user in mind. One approach is to think of all users as distance education users; what is good for the distance learner will in most cases be good for all library users.

Be an Advocate on Campus

After identifying the "players" on campus, librarians should make every effort to network with them. Librarians and library administrators can attend or, even better, initiate meetings of persons involved in distant education. When appropriate, librarians can educate colleagues about national distance education guidelines and, in particular, sections related to library services. In collaboration with teaching faculty or technical staff, librarians can identify and apply for relevant grant money or institutional funding. Librarians are likely to become the "resident experts" in areas of interest to distance educators, for example, copyright or plagiarism, and should volunteer to share knowledge at local forums. Above all, librarians should be visible.

Librarians should take particular care to educate the teaching faculty about what library resources are available and which are not. Faculty may automatically assume that their students will have unfettered access and delivery services, build their assignments around these assumptions, and then be upset when they discover that they are not true. Students in such situations are likely to also be upset and direct their anger at the library. Building on established relationships to address such problems can save time and frustration for librarians, teaching faculty, and students.

Be an Advocate in the Library

The biggest challenge may be changing attitudes held within the library. Librarians must be reminded that distance learners are in the patron base, that they are an increasing population, and that there is an institutional, ethical, and professional obligation to serve them. When possible, librarians should find other colleagues who share their commitment to serving distance education faculty and students and share expertise and experience. If there is no librarian charged with responsibility for distance learners, a committee or task force can be established to facilitate study and planning in this area.

Librarians can also remind their colleagues to ask how decisions about services and resources will affect the distance education student. For example, will a proposed document delivery service be available to distance education students? Can the full-text database under consideration be accessed remotely?

The *ACRL Guidelines* should be useful when working with other librarians, in particular note the emphasis in the guidelines on distance learning library services that are "equivalent to" – not the "same as" – services for on-campus learners.

Assess Your Success

Success is a relative term. To measure a fledgling program of distance learning library services against the *ACRL Guidelines* would undoubtedly be discouraging. At the other extreme, any movement in the right direction might be considered success.

Assessing the achievement of measurable short-term goals similar to those mentioned in the previous section is an important measure of success. Informal measures, such as focus groups, can serve as another form of assessment and can provide not only an evaluation of existing services but also valuable information for planning. A more formal method of evaluation, a survey, could also prove valuable both as an evaluative tool and as a needs assessment instrument. If all persons surveyed indicate that delivery of books and articles to students is a primary need, this information can be used in planning. Information gathered through both informal and formal methods should prove useful when prioritizing how limited funding will be spent.

Conclusion

A quality distance education program requires quality library services and resources. Quality library services and resources require institutional commitment of funds and personnel and any program without adequate funding and support will face serious limitations. Librarians who lack support, however, can use the strategies outlined above to begin addressing the needs of distance learners. By assuming this leadership role and becoming advocates for distance learning library services, they can establish that such services and resources are needed and lay the foundation for future developments which will provide distance learners with the library services and resources to which they are entitled.

Reference

Association of College and Research Libraries. (July 1998). *ACRL guidelines for distance learning library services*. Retrieved June 11, 1999, from the World Wide Web: http://www.ala.org/acrl/guides/distlrng.html

Biographical Sketches

Sharon Naylor is the Education Librarian and an Assistant Professor at Milner Library, Illinois State University, and has master's degrees in education from Illinois State University and in library and information science from University of Illinois at Urbana-Champaign. Sharon works with many graduate level distance learning students, including cohorts from as far away as Thailand.

Address: Milner Library
Illinois State University
Campus Box 8900
Normal, IL 61790-8900
E-mail: Sknaylor@ilstu.edu
Phone: (309) 438-7188
Fax: (309) 438-3676

Lisa Janicke Hinchliffe is the Library Instruction Coordinator and an Assistant Professor at Milner Library, Illinois State University, and has master's degrees in library science and educational psychology from the University of Illinois at Urbana-Champaign. She is interested in how people use, learn to use, and misuse information in networked environments as well as the unique circumstances of doing so in a distance learning context. Lisa previously worked with distance education at Parkland College.

Address: Milner Library
Illinois State University
Campus Box 8900
Normal, IL 61790-8900
E-mail: Lwhinch@ilstu.edu
URL: http://alexia.lis.uiuc.edu/~janicke/lisa.htm
Phone: (309) 438-7045
Fax: (309) 438-3676

Sharon and Lisa co-chair Milner Library's recently formed Ad Hoc Committee on Distance Education.

Reliable Market Intelligence for Distance Education: A Knowledge Tree Approach

Kenneth S. Rudich, Television Production Manager
Distance Learning Technology, Arizona State University

Introduction

In a recent speech Sir John Daniel, Vice Chancellor of the Open University, remarked that " . . . conventional higher education—and the higher education policies of the states—are not ready for the market economy they find themselves in" (Daniel, 1998). While perhaps unsettling, this observation does present an ineluctable truth: higher education has indeed entered the new and largely unfamiliar territory of having to operate in a market economy. As a result, it is confronted with the challenge of learning to become market responsive—that is, of consistently responding to consumer demand and market forces as they change and evolve over time. Moreover, the onus for introducing this philosophy—and its associated practices—into higher education will likely have to be borne by those responsible for developing and shaping an institution's outreach activities, for they will be the ones most exposed to the realities of the market economy. Put another way, they are apt to inherit a role as leaders of change.

Faced with these circumstances, perhaps no other tool will better serve a provider or broker of extended education products and services than a well-designed market intelligence database. I make this claim for two reasons. First, reliable market intelligence is the cornerstone to being market responsive. As a matter of fact, one can reasonably argue that the gathering of reliable market intelligence precedes all other efforts that aim to make a service organization be or become market responsive. The basis for this argument can be traced to the definition of intelligence itself. Webster's defines intelligence as "the power of meeting any situation, especially a novel situation, successfully by proper behavior adjustments; also, the ability to apprehend the interrelationships of presented facts in such a way as to guide action towards a desired goal." Thus market intelligence is more than mere information; it is, by my definition, the regular and systematic assembling of insights about the market, which bear directly on the strategic and tactical planning process.

A second reason for developing a market intelligence database has to do with its usefulness as an advocacy tool for promoting an institution-wide transition to a stronger, more proactive, more collaborative market orientation. By fleshing out the potential market in a way that makes its various parts measurable, observable and explainable over time, including the ability to apprehend key interrelationships, the market, instead of looming "out there" as an abstract concept, takes an appreciably tangible form. From a human nature perspective, this ability to present the market dynamics in more concrete terms, to give decision makers something they can readily grasp, is almost certain to favorably influence motivation and foster a greater measure of esprit de corps.

Purpose

In this presentation, I discuss the procedure for building and using a type of market intelligence database known as a Knowledge Tree (McCann, 1986). My main purpose is to show how the Knowledge Tree database gives added value by augmenting a provider's technical skill with an ability to continually track and analyze its market—especially as it grows in size, complexity and/or diversity—while striving to engineer the following outcomes:

- build and maintain a customer responsive programming mix;
- identify and attract new customers;
- optimize customer retention;
- maximize net revenues over time;
- strategically allocate and control operational resources and costs;
- customize communications and build greater trust with suppliers, key stakeholders and/or other constituents;
- reliably test the responsiveness of new products and/or new markets.

A Market Model

An appreciation for the true value of a market intelligence database begins with an understanding of the market as it relates to the individual provider or broker of extended education products and services. Generally speaking, the market is a collection of relationships that need to be managed over time. From the standpoint of a provider or a broker, these relationships include, but are not necessarily limited to, the following:

- Recruiting, shaping and/or maintaining supportive supplier channels.
- Effective, efficient management of the production processes, the programming mix, and the support services.
- Recruiting, shaping and/or maintaining reliable distribution channels.
- Creating awareness, interest and action among potential new customers.
- Effecting reinforcement and habit among potential repeat customers.
- Contending with market forces. Market forces include, but are not limited to, the parent institution's culture, the regulatory climate, the economic climate, technology trends, educational trends and, given the nature of the market economy, plenty of competition.

In this model, consumer demand and market forces (categories 4, 5 and 6) are at the origin of the provider's response. They dictate the nature, shape, form and diversity of the other relationships (categories 1, 2 and 3). The rub, however, is that consumer demand and market forces themselves are in a state of flux, which creates a need to make adjustments and re-adjustments to the other relationships, especially if the provider wishes to maintain a balance between efficiency, effectiveness and responsiveness. In a sense, it's like dancing with a partner, wherein consumer demand and market forces lead while the provider responds with a proportionately appropriate mix of products and services.

The Market Intelligence Database

If a market intelligence database is going to furnish feedback that helps a provider or broker stay in step with the market it serves, then the database must possess two overriding characteristics. First, it must capture what I call the layout of the market; and second, it must employ meaningful market performance measures.

The Layout of the Market

In my view, the layout of the market refers to the framework or structure of a provider's or a broker's total potential market. The distribution channels, along with the physical arrangement of the target populations that reside within each distribution channel, determine this framework. Owing to its physical nature the layout can be used as a template to start organizing the market within the database as a series of progressively smaller, measurable, interrelated parts. The benefit of this procedure is analogous to a doctor having a working knowledge of the human anatomy. In other words, it will aid the process of tracking, monitoring and/or isolating the various market dynamics that are in play.

The Market Opportunity Analysis

Once the layout of the market has been determined, a market opportunity analysis (MOA) is performed for each distribution channel. Though the broad objective of the MOA is to unearth raw information related to all of the other marketing mix variables (i.e., promotion, pricing and product), the emphasis, with regards to building a data structure for the Knowledge Tree, will be on collecting numerical estimates for each physically distinct population found within a given distribution channel. These numerical estimates will later serve as ballpark references, or benchmarks, for the performance measures—so one can determine *what* is happening over time in conjunction with the *where*. (It is worth noting that the process for collecting this raw data need not necessarily entail the use of expensive or labor-intensive methodologies. In most cases, the desired information can be obtained from expert sources and/or other readily available databases.) In addition, this data collection procedure will endow the database with two key structural attributes: a width dimension and a depth dimension. The width dimension refers to the following four distinctly different sections of the database:

- ❖ Population Analysis—Segments a population into groups on the basis of common or shared characteristics. Quantitatively estimates the size of each group. Identifies tentative relationships between each group and each separate courseware category.
- ❖ Demand Analysis—Creates quantified estimates of demand for each courseware category, including the potential for product cannibalism. Product cannibalism occurs when one product category steals potential customers from from another product category. For instance, when an engineer takes a business course instead of an engineering course.
- ❖ Environmental Scan—Identifies key environmental factors or influences which enhance or hamper enrollment potential. These factors may be of internal origin, or they may be external forces. They include, but are not limited to, economic, political, social, cultural

and technological trends. Unlike the other categories, this information will be qualitative in nature.

- Competitor Analysis—Identifies and analyzes key competitors associated with the population under scrutiny, especially as it concerns the offering of comparable services.

The depth dimension refers to the multiple levels of information that exist within a given section. For instance, the quantified estimates of demand for credit courseware might be organized into the following levels (based on product characteristics):

- total estimated demand for credit courseware
  - estimated demand for credit courses for each distribution channel
    - estimated demand for credit courses for each college within a distribution channel
      - estimated demand for credit courses for each discipline within a college
        - estimated demand for each courseware level within a discipline (undergraduate, graduate, doctorate)
          - estimated demand for each course type within a courseware level (traditional, short course, seminar)

The Market Performance Measures

The MOA completes the task of organizing the market into an array of progressively smaller, measurable, interrelated parts. Each measurable part of the market, as determined by the layout, has its own set of real-time performance measures. As one might guess from the investigative work done in the MOA, these performance measures are divided into three categories: population analysis measures, demand analysis measures, and competitor analysis measures (depending on data availability, there may be some gaps in the competitor analysis measures). This approach gives the advantage of having four distinctly different perspectives from which to view each measurable part of the market (including the environmental scan information). As time passes and performance data is accumulated, the database is transformed into a knowledge perusal system that permits a clear-cut analysis of: (a) the performance results for any desired combination of product-market characteristics (called product-market partitions); (b) the tracking of key interrelationships, changes and trends that emerge among the performance data within a specific type of analysis (i.e. demand, population, competitor); and (c) the cross-referencing of performance data and information between the four major sections of the database (i.e., demand, population, competitor and environmental scan). From the standpoint of an intelligence tool, this capability, sometimes referred to as data mining, greatly facilitates the planning and evaluation of market strategy and tactics from one performance period to the next.

For example, in the demand analysis section of the database one might query the performance of a specific product-market such as engineering credit courses at a company site in the ITFS distribution channel. In this case, the performance data for that site would include

- Performance Periods—Indicates the performance period by semester and year.

- Estimated Potential—Indicates estimated potential demand for engineering courses at this site as per the market opportunity analysis.
- Actual Customer—Indicates actual enrollment by performance period.
- Market Share—Measures percentage of actual customers relative to the estimated potential by performance period. When a current market share is compared to past market shares of the same product-market partition, a consumer trend emerges. This trend will indicate growth, stability, decline or inexplicable fluctuations. It may also reflect explainable fluctuations such as those due to seasonal or environmental scan factors.
- Repeat Rate—Measures the actual percentage of repeat customers relative to the known potential for repeat customers by performance period. The repeat rate gives feedback about customer retention and the tactics that aim to produce it.
- New Customer Rate—Measures the percentage of new customers vis-à-vis the estimated potential for new customers by performance period. The new customer measures yield feedback about the strength of new customer growth and also the estimated potential for new customer growth. In addition, by tracking these results over time the provider can get a sense of how well the service is being promoted within the population (especially when cross-referenced with target group percentages in the population analysis section); the effect a key competitor might be having on new customer growth potential (when cross-referenced with the competitor analysis section); and/or it can be one indicator of whether consumption has reached a saturation point for the current mix of courses.
- Net Loss or Gain—Compares the potential number of repeat customers which were lost to the number of new customers which were gained to determine if there was a net loss or gain for the current performance period.
- Attrition Rate—Measures percentage of students who had enrolled at the beginning of the performance period, but also dropped out before the end of the performance period. When compared with other site results, it provides key clues for assessing whether attrition is due to product or market circumstances.

Consumer Trends and Market Changes

When the same or similar measures as discussed above are applied throughout the knowledge tree,. the market dynamics—the interplay of its different parts—can be observed over time (especially when done in conjunction with mind-mapping and visualization techniques that promote comprehension, such as multi-level product-market matrices). Typical ways of monitoring market dynamics include the cross-referencing of various performance results to clarify or verify significant events, and the tracking of trends within trends. This capability ties in nicely with identifying a provider's strengths, weaknesses, opportunities and threats across all six categories of the market model mentioned earlier. Other benefits include: (a) it permits the early detection of shifts or changes in consumer behavior, (b) it allows the provider to evaluate the scope and direction of a change, and (c) it logs the accumulation of market experience/knowledge over time.

This same approach may also be used to project the trends for the next performance period. These projections are formulated after evaluating all the current performance trends (i.e. the demand analysis trends, the population analysis trends, and the competitor analysis trends), and the foreseeable market conditions. As such, different courseware mix or market growth scenarios can be weighed to determine which specific allocation of resources is likely to produce the best results.

Conclusion

A well-designed knowledge tree can yield many performance benefits. Its structured approach, for example, keeps the market at the center of attention, which helps to ensure that more careful thought and more deliberate planning will go into delivering a provider's services than ever before. Of greater significance, however, is that it gives added value by augmenting a provider's technical skill with an ability to consistently and accurately "read" the market, to communicate this information convincingly and effectively, and to more precisely tailor strategy and tactics while striving to engineer the following outcomes: build and maintain a customer responsive programming mix; identify and attract new customers; optimize customer retention; maximize net revenues over time; strategically allocate and control operational resources and costs; customize communications and build greater trust with suppliers, key stakeholders and/or other constituents, and reliably test the responsiveness of new products and/or new markets.

References

Bader, H. (1986). *Handbook of marketing for continuing education.* San Francisco: Jossey-Bass.

Camdessus, M. (1998). *Madagascar: Growth in a market economy.* Speech by Managing Director of the International Monetary Fund before the National Assembly. Available: http://www.imf.org/external/np/speeches/1998/100698.html

Cobb, J. (1999). *The fear of 'adequate substitutes.'* Academyonline. Available: http://www.academyonline.com

Daniel, Sir J. (16 November 1998). *Tectonic shifts in higher education.* Speech delivered at Arizona State University, Tempe.

Kotler, P. & Andreason, A. R., (1987). *Strategic marketing for non-profit organizations.* Englewood Cliffs, NJ: Prentice-Hall.

Korten, D. C. (1997). *Let's try something radical: Like a market economy.* Plenary Presentation to the People's Summit. Available: http://iisdl.iisd.ca/pcdf/1997/toes97.htm

Maister, D. H. (1998). *The courage to have a strategy.* Maister Associates. Available: http://www.davidmaister.com

McCann, J. M. (1986). *The marketing workbench.* Illinois: Dow Jones-Irwin.

Rudich, K. S. (1998). *Reliable market intelligence for distance education*. Online Symposium DEOSNEWS. Post to LISTSERV@PSUVM.PSU.EDU. 8(8), 1062-9416

Simerly, R. G., & Associates. (1989). *Handbook of marketing for continuing education*. San Francisco: Jossey-Bass.

Biographical Sketch

Kenneth S. Rudich holds an MBA with an emphasis in marketing from Arizona State University. He has been with ASU's Distance Learning Technology Unit for nearly fifteen years, and is a member of the unit's strategic planning team. He has published marketing-related articles in peer review and on-line journals, given several conference presentations, and received the 1999 University Continuing Education Association Publications Award for his market intelligence database concept.

Address: Arizona State University
College of Extended Education
Distance Learning Technology
PO Box 870501
Tempe, AZ 85287-0501
E-mail: Kenneth.Rudich@asu.edu
Phone: (480) 965-1744
Fax: (480) 965-4834

How Do You Plan, Develop, and Implement a Statewide Virtual Community College in One Year?

John M. Thompson
Dean Instructional Resources/Technology
Spokane Falls Community College

Connie Broughton
Manager, Washington Online
Washington State Community and Technical Colleges

How do you get from here to there? It all depends upon where you start and where it is you want to go. Even when you have those two things firmly in place you realize that there are still a variety of routes to use. Finding the starting place and determining the route were the problems facing the state of Washington's thirty-two community and technical colleges just over a year ago. Our goal was to determine how best to deliver online distance learning to the citizens of the state. Since Washington State community and technical colleges have a long history of working together, it was clear that a cooperative effort would be an economical and feasible option.

When attempting to develop a cooperative project with thirty-two partners, the phrase "how does it impact my college" becomes the first issue of discussion. Washington state's community and technical colleges range in size from approximately 1,000 FTEs to over 5,000 FTEs in very rural locations and in major metropolitan areas with overlapping jurisdictions. What is the common starting point for thirty-two colleges, each of which is at a different point of development in their attempts to meet their students' distance learning needs?

Finding the "Here"

Well, if you are in education, you begin by forming a committee. An ad hoc group comprised of a current college president, a former president, distance learning coordinators, faculty, information technologists and support specialists met to discuss the concept of a collective online distance learning program. It was from that group's deliberations that the proposal to create the Washington State Community and Technical Colleges ONLINE Consortium (Washington ONLINE or WAOL) originated. The committee stated the need for a collaborative effort to address online distance learning in the following way:

- **Problem.** Citizens and students are expecting and demanding distance learning opportunities. Local institutions must provide that opportunity or students will gravitate to colleges that do. Online teaching technologies, systems, and curricula are too expensive to acquire, develop and operate separately.
- **Objective.** Develop and implement a governance and program delivery model to enable all the community and technical colleges to offer a comprehensive listing of online distance learning opportunities.

With the problem and objective firmly identified, the ad hoc committee began to discuss how the objective might be achieved and by May 1997 had formulated a plan. Since the college presidents meet on a monthly basis as a group to discuss, plan and approve of efforts that affect all the schools, a presentation of the Washington Online concept was arranged for their June meeting. The plan presented was inclusive and provided the opportunity for colleges to participate on a variety of levels. After some discussion, the presidents' educational service committee approved the concept and asked that it be brought back to their July/August meeting with a few changes, including a final budget. The Washington ONLINE proposal that was approved and funded by the presidents enabled colleges to participate in one or all of the following ways:

- **Teaching Institution.** A *college selected to develop, teach, and maintain one or more of the twenty foundation courses to be delivered by Washington Online*. (The Washington ONLINE plan included the development and delivery of twenty courses that would become a basic core curriculum that could be offered by each college. The twenty core courses were to be a foundation upon which individual colleges could build individual distance learning programs.)
- **Consulting Institution.** *A college selected to provide one or more faculty to work as consultants on the initial twenty courses*. (The goal was to have at least four faculty members serve as consultants for each course. This would insure that course outcomes included more than one member's perspective and would help overcome the "not invented here" syndrome.)
- **Participating Institution.** *Colleges offering the courses developed and delivered by Washington ONLINE*. (Since Washington ONLINE does not enroll students, it is up to each college to adopt and offer the courses. It is not required that a college accepts and offers all of the courses to participate.)

Management, Criteria And Standards

With the ways a college could participate established, it was left to the college's chief instructional officers to determine how Washington Online would be managed. That committee, the Instructional Commission, delegated management of Washington Online to Spokane Falls Community College (SFCC). As SFCC's Dean of Instructional Resources and Technology, I was named as project manager, and Connie Broughton was hired as the project coordinator. The management team is assisted by a steering committee comprised of representatives from instruction, student services, distance learning, libraries and faculty. With a budget of just over $500,000 and with just under two years for development, implementation and successful operation, the management team and advisory board began the development phase immediately. It was quickly determined that to be successful Washington ONLINE would need to implement a service, which would do the following:

- Enable unique college identities to be presented for individual and WAOL offerings.
- Insure that all courses had a *common look and feel* to make it easier for students.
- Provide a full complement of online services—a "virtual college" (registration, library, bookstore, advising, course catalog, student union, etc.).
- Provide an infrastructure that keeps up with technological change and is user friendly.

- Provide support and training to faculty and colleges developing and/or offering online courses.
- Enable colleges to focus on offering distance learning opportunities and not on technology systems.
- Insure that colleges enroll students, grant credit, award degrees and retain all FTEs.
- Develop a marketing plan and promotional materials for use by the participating colleges.
- Equitably distribute the costs based upon enrollment.

With these objectives in mind, the project team began to draft criteria for the selection and development of courses and a technical infrastructure. The stated goal was to enable each of Washington's community and technical colleges to provide expanded access to learning opportunities for the citizens of Washington state, and beyond, by cooperatively providing instruction, resources and technical support to enhance learning and improve student outcomes. Early in the planning process the ad hoc committee recommended that the course content be developed by faculty from the colleges in the system, but that the technology to deliver those courses be purchased from an outside vendor. The goal was, and is, to place the emphasis on instruction rather than on technology.

The next step was to develop standards for course development, the Bible by which course proposals were evaluated and the course development and training programs were structured. Learning activities delivered by Washington ONLINE must be developed according to the following criteria:

- Distance learning activities are designed to fit teaching/learning requirements.
- Distance learning opportunities are available to learners through a variety of fully accessible modes of delivery and resources.
- Distance learning initiatives are backed by Washington ONLINE'S commitment to quality and effectiveness in all aspects of the learning environment.
- Distance learning programs organize learning around demonstrable learning outcomes, assist the learner to achieve those outcomes, and assess learner progress by reference to those outcomes.
- The courses developed for and delivered by Washington ONLINE have a plan and infrastructure for use of technology to support specific learning goals and activities.

Each of these criteria was further delineated with clearly defined objectives. As part of the commitment to student-centered course development, further criteria were established to insure that there was a *common look and feel* to the courses.

Course Development

With the establishment of the criteria and standards for course development, Washington ONLINE sent requests for course proposals to each college. Faculty were sought who would be interested in developing courses fulfilling the basic undergraduate requirements for an AA Degree. Faculty interested in developing a course were promised a full quarter of release time, extensive training and technical support. In exchange they had to work with at least four faculty consultants, participate in all training activities and agree that the course would belong to the system and be available for use by any of the colleges. This request elicited over 140 course proposals of which nineteen have been selected for development by seventeen different colleges.

Choosing a Vendor

While the request for course proposals was at the colleges, the project managers and the steering committee developed criteria to be considered in selecting a technology infrastructure. Even though it had already been determined that the project would contract for technology services rather than create its own technology solution, the commitment to hire a third party vendor to provide the technology infrastructure caused a lot of concern. However, the decision to seek a single provider was predicated upon the following needs:

- A rapid start
- A utility-grade operation
- 7 x 24 operation
- 7 x 24 technical support to students and faculty
- A high degree of trust by students and faculty that the system would always work
- Low staffing needs
- "Virtual" college services, that is, to be more than a collection of courses
- Comprehensive student services
- Comprehensive catalog of course offerings
- Rapid technology change
- No capital investments in equipment with a relatively short life span
- Low initial investment
- Economical operation
- Cost based upon use
- A common look and feel for all WAOL courses

With these needs in mind, the steering committee prepared a Request for Information seeking proposals from third party vendors.

Seven vendors responded, six of whom represented themselves as being able to provide the necessary comprehensive system. These six proposals were assessed based upon the following criteria:

- Open or closed software solutions (Could we move the WAOL technology system to our own server in the future without making major software changes?)
- Multi-platform (Could students and faculty utilize all aspects of WAOL with either PC or Macintosh based systems?)
- Ownership (Would the state's community and technical colleges have ownership of the course content and be able to manage how courses and the "virtual college" system were developed?)

- Cost (Both up front—one time—and continued operation based upon a hypothetical enrollment cost per student.)
- Performance and technical support (How were they limited and was there 7 x 24 technical support?)
- Stability (Did the vendor have a track record of meeting their commitments? Did the proposal seem feasible in light of the vendor size and expertise?)
- Scalability (Would the proposed system allow the colleges to meet our growth projections?)
- Adaptability to our existing administrative systems infrastructure. (The state's legacy system is Cobol based with each college having a separate database. We needed to be able to link certain management information systems.)
- Service to students (What did the "virtual college" proposal look like?)

Embanet Corporation

After a review of each proposal, it was decided that only one vendor had addressed all of our needs. The vendor, Embanet Corporation, based in Toronto, Ontario, proposed a solution that was simple and straightforward, yet had the capacity to adapt and change to meet the needs of a system supporting thirty-two different colleges. After a site visit to Embanet and a review of their references, it was determined that a contract to support Washington ONLINE would be negotiated with them. What did Embanet offer that was so different from the other providers?

- The instructional support package offered is based upon the FirstClass communications software. However, Embanet has refined the software so that it is highly adaptable in meeting a variety of instructional approaches. WAOL is limited only by the instructor's imagination in the design of student-student or student-faculty interactivity or techniques used for media presentation. The solutions put forth do not require students to have state of the art technology. All interactivity takes place over the Internet and can be either asynchronous or synchronous. Faculty do not have to become "techies" to implement and maintain highly interactive instruction. The owners, Jeffrey Feldberg and Waleuska Lazo, and their staff impressed us with their commitment to helping WAOL succeed. This commitment was reflected in their references.
- The "virtual college" system proposed by Embanet was adaptable enough to allow WAOL to let the identities of each college be shown.
- The software solutions were both transportable and adaptable to link to our existing legacy system in a manner that allowed us to develop all aspects of a "virtual college."
- The outside support services Embanet brought to WAOL to facilitate a complete and successful project were exceptional.
- And finally, the cost was affordable, and they could meet our tight timeline.

Student Services

With two big hurdles out of the way, WAOL's management team was able to focus on working with each of the groups representing the various support systems within the state. The proposed "virtual college" would impact almost every segment of each college, so it was necessary to get the active participation of such groups as the registrars, financial aid directors, library directors, counselors, student union directors, and the chief student services officers. Besides individual meetings with constituent groups, all parties and faculty were invited to an all-expense-paid, two-day workshop in March. The two -day training session opened with a keynote address focused on educational change, the changing demographics of our clients and the changes in how they will access our services. This presentation, delivered by Doreen Dailey, President of Yavapai Community College in Arizona helped to set the tone for remainder of the workshop.

While the faculties were involved in workshops dealing with distance learning strategies and an introduction to Embanet, the student services groups were enrolled in a special track focused on the "virtual college." Working with Barbara Krauth of WICHE (Western Interstate Commission for Higher Education), the project staff brought representatives from a variety of colleges to begin assisting student services in visualizing how each college could develop or continue to develop student-centered services accessible by distance.

This two-day workshop proved to be pivotal in generating momentum and providing a vision of what Washington ONLINE is coming to mean for the state's community and technical colleges. In this way, Washington ONLINE has had an impact well beyond its intended purpose. As a result of the visibility of change instigated by WAOL, the state's student services officers have established goals and standards for online service, the library directors have generated a plan to provide a statewide collaborative library effort to support distance learners, and the information systems managers have directed the number one systems technology effort be to provide the systems necessary to support distance learning.

Washington ONLINE'S goal is to provide distance learning success for both instructors and students. After finding the right "here" from which to start, we are beginning to see the "there" that is that goal. This cooperative approach is making real the promise of technology that enables us to learn in new ways and to learn outside the boundaries of time and place.

Biographical Sketches

John Thompson was Dean of Instruction for Resources and Technologies at Spokane Falls Community College. He held this and similar positions at the college for 26 years. At SFCC he was responsible for managing Distance Learning, Library Services, Computer Support Services, Media Services, and Adult and Continuing Education. Prior to coming to SFCC John was the Coordinator of Educational Resources at Mankato State University in Minnesota. John has managed the distance learning program for the Community Colleges of Spokane for the past 22 years. He received a BA in Education from the University of Montana, MS in Curriculum and Instruction and his Educational Specialist Degree from Mankato State University. In addition to his duties at Spokane Falls Community College he was the architect and founding director of Washington Online, a cooperative distance learning program involving Washington's 33 Community and Technical Colleges. John has recently retired from Spokane Falls Community College and works as a consultant in distance learning and institutional change.

Address: 4926 S. Long Lane
Greenacres, WA 99016
E-mail: John_m_thompson@embanet.com
URL: www. embanet.com
Phone: (509) 995-5531
Fax: (509) 928-1664

Connie Broughton is the current project manager for WashingtonOnline. In addition to working as a freelance writer and audio-visual producer for twenty years, she also has taught English composition, technical writing and American literature at the Community Colleges of Spokane, Eastern Washington University, and Washington State University. She has an MFA in Creative Writing from Eastern Washington University and is a PhD candidate in American Studies at Washington State University.

Address: Spokane Falls Community College
W. 3410 Fort George Wright Drive
Spokane, WA 99224
E-mail: Connieb@sfcc.spokane.cc.wa.us
URL: www.washingtononline.org
Phone: (509) 533-3005
Fax: (509) 533-3433

Across Institutional Lines: Librarians Partnering for Distance Education

Judy Tribble, Distance Learning Librarian
Indiana State University

H. Scott Davis, Head, Library Information Services
Indiana State University

Background

In Spring 1998, Indiana State University (ISU) initiated DegreeLink, a program which allows individuals who complete articulated associate degrees at Ivy Tech State College, a two-year technical college system, and Vincennes University, a junior college, to transfer their credit to one of five ISU bachelor of science degrees. Students have the option of completing their degrees on campus or via distance education. DegreeLink is the first program of its kind in Indiana and has received partial funding from the Indiana legislature. Courses are being offered via the Web; Indiana's Higher Education Telecommunications System (IHETS) using one-way video, two-way audio; two-way video, videotapes, and text-based correspondence.

Students can use the facilities of Ivy Tech and Vincennes to take their ISU courses. There are a total of thirty DegreeLink Learning Centers located throughout the state, which provide free access to computers, IHETS, and two-way video. The centers are staffed by student service coordinators who advise students on admission, registration, credit transfer evaluation, and financial aid.

Where's the Library?

Providing library support for distance learners is a challenge for librarians and teaching faculty. The Association for College and Research Libraries, a division of the American Library Association, revised its "Guidelines for Distance Learning Library Services" in July 1998, reemphasizing the need for financial support from the institution originating the distance education course. Complete guidelines are found at http://www.ala.org/acrl/guides/distlrng.html

Recognizing that students completing coursework at the bachelor's level will need library resources and materials, the librarians at ISU contacted Ivy Tech and Vincennes librarians to discuss what library support services could realistically be offered to DegreeLink. ISU librarians took the position that meeting the library needs of ISU students was the responsibility of ISU, no matter where the students were located. Because students could visit Ivy Tech and Vincennes sites in their immediate locations to take classes, the Ivy Tech and Vincennes librarians are able to serve as liaisons with the ISU Library.

When DegreeLink began ISU Library already provided the following services to distance learners:

- toll-free 800 number to main information desk

- email-based reference
- remote access to the library catalog
- remote access to dozens of bibliographic and full text databases (students must apply for a password)
- free searching of databases restricted to ISU campus use (by Distance Learning Librarian)
- document delivery of books (shipped free of charge) and articles (small fee; shipped via mail or fax)
- electronic reserve

As a result of discussions with Ivy Tech and Vincennes librarians, ISU Library developed a web page for distance learning support (http://odin.indstate.edu). In addition to information about the above services, the web page provided online request forms for document delivery and access to library instruction handouts on the Web. Another nice feature was the development of a scatter-plot map showing the location, address, phone number and URL (when available) for libraries throughout the state. The purpose of this map was to enable students to visit local public and academic libraries in their area if they so desired to supplement the resources available from the ISU Library. The Web page reminds students that they "should contact ISU librarians for extended support with reference and research questions . . . "

As campus-wide interest and support at ISU increased for the potential of DegreeLink, the library faculty recognized that library support for distance learners might benefit from the development of a position devoted primarily to such support. As a result, in fall 1998 the library administration reassigned a 1.0 FTE library faculty line and created the first Distance Learning Librarian position. Since that time, the Distance Learning Librarian has been able to expedite library program support.

One service component in which ISU Library was lacking was the provision of library instruction to distance learners. While the library has a vigorous instruction program on campus, there had been few occasions in which formal instruction was presented to remote users. Activities were limited to the efforts of a handful of teaching faculty who had students come to campus one Saturday per semester (spending part of the day in the library instruction classroom and lab), or who invited librarians to the television studio to deliver instruction. At best, these approaches were "scatter shot" and did not meet the needs of all distance education students.

Several possibilities for improving instructional outreach are being explored. The ISU Distance Learning Librarian is working on a prototype interactive Web tutorial which will assist students in matching their information needs to appropriate database selection, performing keyword and Boolean searches, and other advanced techniques. If successful, it is hoped the tutorial will be adapted to many databases with limited customization.

In addition, the Ivy Tech and Vincennes librarians will receive instruction from the Distance Learning Librarian on the databases unique to ISU. Presently the Distance Learning Librarian meets with the other 25 or so librarians at a central location at the beginning of each semester to provide updates and instruction. The Ivy Tech and Vincennes librarians provide a basic level of instruction to students on site.

Finally, Ivy Tech and ISU have independently initiated information (technology) literacy programs that include the libraries at each institution. Continuing discussions among the librarians will permit collaboration between all three institutions so students may benefit from a seamless approach to acquiring these skills deemed essential to true lifelong learning.

Memorandum of Understanding

In the spring of 1999, student services representatives from each of the three institutions met to negotiate agreements to serve DegreeLink students. Library services were included as one item of discussion. The respective librarians developed a draft of a "memorandum of understanding" which is included below. The memorandum gives a "snapshot" of what issues the librarians considered important. It is hoped that the memorandum provides a flexible basis for continued partnering between the librarians at the three institutions.

The Important Link—Teaching Faculty

One of the key components of any successful academic library program is the support of teaching faculty members. Unless faculty members develop well conceived, "library informed" assignments that encourage or require efficient use of library resources, students generally will not explore on their own initiative. ISU's School of Continuing Education invites the Distance Education Librarian and other support service personnel to talk with faculty members beginning the process of transforming their traditional on-campus courses for delivery as part of DegreeLink. In addition, the Distance Learning Librarian is invited to present a two-hour session to faculty members enrolled in a professional development seminar that explores the development of distance courses. These opportunities to promote and encourage use of library services always mention the partnership between the librarians at the three institutions.

What's Next?

With the addition of four more programs to DegreeLink planned the Fall of 1999, librarians at both ISU and distance campuses will need to stay abreast of developments and consult with teaching faculty so as to meet any unique needs of students in these new programs. Further, as DegreeLink's lifespan lengthens, librarians will need to review program statistics, critically discuss service successes and failures, and revise support services as appropriate. Given the emphasis that outcomes assessment is receiving in practically all academic arenas, librarians involved in DegreeLink will need to be mindful of how their support services effectiveness impacts student outcomes.

Memorandum of Understanding
DRAFT 3/23/99

Library Support for Students Enrolled in DegreeLink

NOTE: The institutions providing library services to DegreeLink students endorse the principles and directions prescribed in the Association for College and Research Libraries (ACRL) "Guidelines for Distance Learning Library Services" (July 1998) [http://www.ala.org/acrl/guides/distlrng.html].

1. Indiana State University (ISU) has overall responsibility for providing library servicesto ISU students enrolled in DegreeLink courses.

2. The ISU Distance Learning Librarian is responsible for coordinating library services for ISU DegreeLink students.

3. ISU Library support will include the following:

   a. reference assistance and consultation services via web, phone and email

   b. access to networked electronic bibliographic databases and other informational services in accordance with licensing agreements

   c. delivery of library user instruction designed to promote information literacy and independent inquiry

   d. interlibrary loan services via web, phone, fax, or email

   e. prompt document delivery using United Parcel Service, U.S. mail, email, and fax

   f. electronic access to reserve materials in accordance with copyright fair use policies

   g. promotion of library services to the DegreeLink students, faculty, and other support units at ISU, Ivy Tech, and Vincennes

4. Ivy Tech State College and Vincennes University librarians will provide on-site assistance to ISU DegreeLink students using those institutions' library facilities.

5. The ISU Distance Learning Librarian will provide inservice updates on distance library services for Ivy Tech and Vincennes librarians at least twice a year and will communicate new developments using email.

Signed: ______________________ ______________________ ______________________

Indiana State University IVY Tech State College Vincennes University

Biographical Sketches

Judy Tribble received her B.A. in Humanities from Saint Mary-of-the-Woods College and her Master's in Library Science from Indiana University, Bloomington. Since 1984, Mrs. Tribble has been employed as a faculty member at Indiana State University (ISU) Library, first as an interlibrary loan librarian, then as Head of Lending Services, responsible for circulation and interlibrary loan. In these capacities, she has been involved with front line service to distance learners, particularly in the area of document delivery. In November 1998, Mrs. Tribble assumed a new role at ISU as Distance Learning Librarian. She sits on various committees at the ISU School of Continuing Education and Instructional Services and currently serves on a working group to recommend policy for student support services for the Degree Link institutions, namely, ISU, Vincennes University, and Ivy Tech State College. Mrs. Tribble copresented at the Association for Continuing Higher Education Annual Conference on the topic, "Where's the Library? Planning for Library Services for Distance Learning," in November 1998.

Address: Indiana State University
Cunningham Memorial Library
Terre Haute, IN 47809
E-mail: libtrib@cml.indstate.edu
URL: http://odin.indstate.edu
Phone: (812) 237-2592
Fax: (812) 237-2567

Scott Davis received his B.S. in Psychology and his Master's of Library Service from the University of Alabama. He holds a doctorate in Instruction, Supervision and Curriculum with an emphasis in educational media and technology from Texas A&M-Commerce (formerly East Texas State University). Dr. Davis joined the faculty of Indiana State University in 1985, originally as head of Library Instruction & Orientation. In 1992, a library reorganization placed him as head of Library Information Services which includes traditional academic reference support, user instruction, electronic information services, and government documents. As a middle management administrator, for the past 12 years he has been an active participant in the evolution of academic library services necessitated by the changes in higher education brought on by increased computerization. Providing library support services to distance students in ways consistent with on-campus library services has been one of the more recent challenges requiring attention and action. In addition to active professional service at Indiana State University and in the American Library Association, Dr. Davis has a record of presentations and publications in the area of library personnel management, staff training and development, and end user support and education.

Address: Indiana State University
Cunningham Memorial Library
Terre Haute, IN 47809
E-mail: libdavi@cml.indstate.edu
URL: http://odin.indstate.edu
Phone: (812) 237-2580
Fax: (812) 237-2567

ORDER FORM
Conference Proceedings
From Annual Conference on Distance Teaching and Learning
Madison, Wisconsin

Please enter the number of copies you want to order and the amount due, including shipping costs (see reverse side).

All orders must be prepaid. Make check payable to University of Wisconsin—Madison.

Name ____________________

Organization ____________________

____
Address

____
City State Zip

Proceedings	**No. of copies**	**Amount due**
1999 Conference: *Distance Learning '99* 519 pages, $25.00	________	________
1998 Conference: *Distance Learning '98* 576 pages, $25.00	________	________
1997 Conference: *Competition, Connection, Collaboration* 471 pages, $25.00	________	________
1996 Conference: *Designing for Active Learning* 402 pages, $23.00	________	________
1995 Conference: *Teaching Strategies for Distance Learning* 320 pages, $20.00	________	________
1994 Conference: *Designing Learner Centered Systems* 198 pages, $15.00	________	________
1993 Conference: *Teaming up for Success* 205 pages, $15.00	________	________
1992 Conference: *From Vision to Reality: Providing Cost-Effective, Quality Distance Education* 35 session papers, 176 pages, $13.00	________	________
Subtotal	________	$________

Proceedings *(continued)*	**No. of copies**	**Amount due**
1991 Conference: *Designing for Learner Access* 47 keynotes and session papers, 270 pages, $15.00		
1990 Conference: *Challenges for New Learning Systems* 30 keynotes and session papers, 205 pages, $12.00		
1989 Conference: *Helping Learners Learn at a Distance* 30 keynotes and session papers, 196 pages, $12.00		
1988 Conference: *Changing Roles in Education and Training* 32 keynotes and session papers, 158 pages, $12.00		
1987 Conference: *Evaluation of Teaching/Learning at a Distance* 25 keynotes and session papers, 220 pages, $12.00		
1986 Conference: *Improving Teaching at a Distance* 5 keynotes, 69 pages, $5.00		
1985 Conference: *Effective Teaching at a Distance* 6 keynotes, 86 pages, $5.00		
1985–89 Conference Proceedings Package $35.00 (save $11.00)		
Subtotal		$
Page 1 subtotal		$
Add 15% (U.S. only) for shipping		$
(Outside U.S.: Surface shipping rate unless specified otherwise)		$
U.S. funds total		$

Make check payable to University of Wisconsin—Madison
(We are sorry but at this time we cannot accept credit card orders.)

Mail form and payment to

Conference on Distance Teaching & Learning
University of Wisconsin-Madison
1050 University Ave., B-136 Lathrop Hall
Madison, WI 53706-1386

Telephone: (608) 265-4159